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ABSTRACT

A 1988 study that examined the economic performance of 22,091 graduates in 1984 of 14 vocational programs in Ohio used federal income tax records. Twelve of the programs with 20,557 graduates were at the secondary level, and 2 with 1,534 graduates were at the associate level. The incomes of vocational graduates were compared to income of equivalent groups in the general population. The study also investigated the geographic mobility of vocational graduates since 1979. Results showed predominantly higher incomes for vocational graduates than for the general population. The result varied by vocational program, but the ratios were higher than 1 for the 1979 graduates in all programs. The income advantage ranged from 5 to 85 percent for graduates of secondary programs and from 12 to 68 percent for graduates of associate programs. (An executive summary and 51 tables and diagrams are provided.) (YLB)

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1984 Vocational Education Graduates

in 1988

A Study Based on Federal Income Tax Data

by

I. A. Ghazalah

Professor of Economics
Ohio University

U.S. DEPARTMENT OF EDUCATION
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1993

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Executive Summary

Ohio University
Athens, Ohio 45701
1993

The economic performance of graduates of vocational programs is a primary factor in the evaluation of vocational education. This study evaluates the performance of students who completed state-funded vocational job-training programs in Ohio.

The study uses an original source of information – federal income tax records. The data were provided in batch form by the Internal Revenue Service from its Information Returns Master File in full compliance with the strict requirements regarding disclosure of personal information.

This study examines the performance in 1988 of 22,091 graduates in 1984 of fourteen vocational programs. Twelve of the programs with 20,557 graduates were at the secondary level, and two with 1,534 graduates at the associate (second-year college) level.

The incomes of vocational graduates were compared to those in the general population at the same age bracket, educational achievement and geographical location. Data on the equivalent groups in the general population were based on Bureau of the Census, Current Population Survey and Survey and Regional Population and Per Capita Estimates for Counties and Incorporated Places.

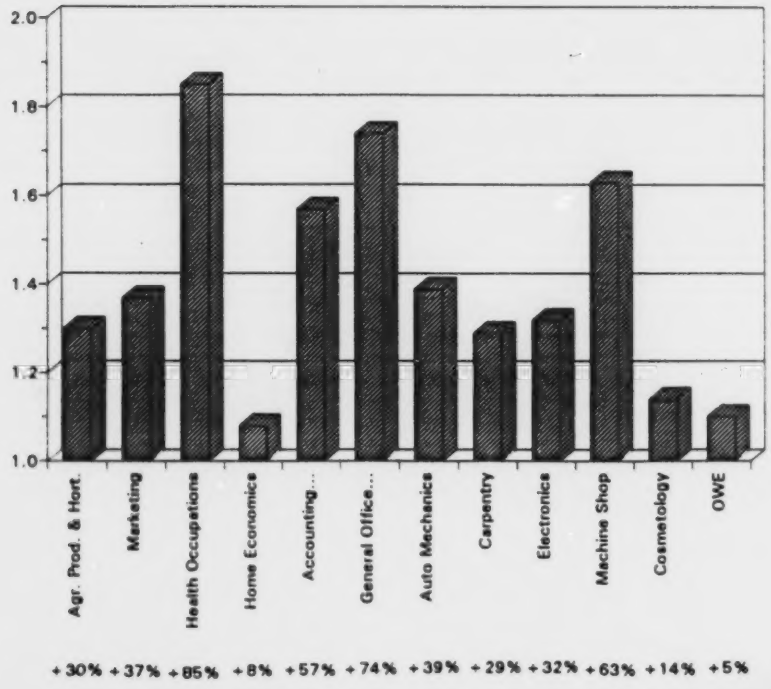
The results of the study indicate predominately higher incomes of vocational graduates than others in the general population who are of the same age bracket and years of schooling, i.e. 18-24 years old and 4 years of high school for Secondary Vocational graduates, and 25-34 years old and 1-3 years of college for Associate Vocational graduates.

The following tables and the corresponding graphs show the ratio in 1988 of the average income earned by 1984 vocational graduates to the average income of the equivalent group. The ratios for graduates of all secondary and associate programs are higher than 1. The income advantage ranges from 5% to 85% for graduates of secondary programs and 12% and 68% for graduates of associate programs.

Ratios of Mean Income of 1984 Secondary Vocational Graduates to Mean Income of Equivalent Group in the General Population (1988 Tax Year)

Vocational Program	*Vocational Graduates Compared to Equivalent Group*	
	Mean Income Ratio	Percentage Advantage
Agricultural Production and Horticulture	1.30	30%
Marketing	1.37	37%
Health Occupations Education	1.85	85%
Home Economics	1.08	8%
Accounting, Computing and Business Data Processing	1.57	57%
General Office Clerk, Stenographic, Secretarial and Related Occupations	1.74	74%
Auto Mechanics	1.39	39%
Carpentry	1.29	29%
Electronics	1.32	32%
Machine Shop	1.63	63%
Cosmetology	1.14	14%
Occupational Work Experience	1.05	5%

Secondary Programs



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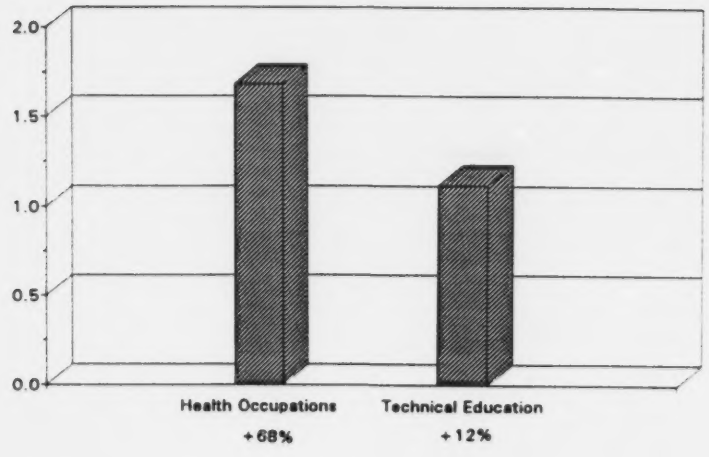
Ratios of Mean Income of 1984 Associate Vocational Graduates to Mean Income of Equivalent Group in the General Population (1988 Tax Year)

Vocational Program	*Vocational Graduates Compared to Equivalent Group*	
	Mean Income Ratio	Percentage Advantage
Health Occupations Education	1.68	68%
Technical Education	1.12	12%

Associate Degree Programs



1984 Vocational Education Graduates

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Ohio University

Ohio University
Athens, Ohio 45701
1993

The research project reported herein was performed pursuant to agreement with the Ohio Department of Education's Division of Vocational and Career Education. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. This research does not necessarily represent official positions of the Ohio Department of Education.

Ted Sanders
Superintendent of Public Instruction
State of Ohio

It is the policy of the Ohio Department of Education, Division of Vocational and Career Education, that educational activities, employment, programs, and services are offered without regard to race, color, national origin, sex, religion, handicap, or age.

PREFACE

The purpose of this study is to evaluate vocational education by examining the economic performance of vocational graduates. In its measurement of this performance, the study uses an original source of information – federal income tax records. The Internal Revenue Service provided the data in batch form in full compliance with the strict requirements for protection of personal information.

I am deeply indebted to many individuals and organizations for their assistance and cooperation in the design and implementation of this study. At the Internal Revenue Service, Dr. Fritz Scheuren, Director, Statistics of Income Division lent his gracious support and encouragement to the research effort. Mr. Peter Sailer provided encouragement, valuable coordination and advice. Ms. Dodie Riley was a source of insightful advice, unfailing support, effectiveness and genuine interest in the project. Ms. Cathy Katz and Mr. Ray Salen organized and processed the data with ability and dedication.

Dr. Darrell L. Parks, Director, Vocational and Career Education, Ohio Department of Education gave his persistent and keen support to the research project. Dr. G. James Pinchak, Associate Director, was a valuable source of encouragement, judicious coordination and advice at different stages of the research.

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Athens, Ohio

I. A. Ghazalah

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CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

Vocational education, as all forms of education, has a multi-dimensional effect on the welfare of individuals and society. Determination of the economic performance of graduates of vocational programs is essential to the process of decision making over the allocation of a given set of scarce resources among numerous competing uses.

Studies of the economic performance of vocational education graduates generally rely on earnings and related data gathered through personal surveys. Such follow-up studies have a number of limitations:

1. small percentage of returns in the form of completed questionnaires,
2. doubt about the randomness of returns, i.e. that they represent a random sample of the surveyed population,
3. doubt about the accuracy of information provided, partly because the individuals surveyed may not have the information readily available in the form sought by investigators. Particularly in the case of income earned over a full year (let alone various categories of income), the data obtained could suffer from significant inaccuracies.

In its measurement of the economic performance of graduates of vocational programs, this study uses an original source of information -- federal income tax records. The federal income tax source avoids a number of limitations associated with follow-up studies utilizing questionnaires. The tax data records are standardized by type of income and by period (tax year), and do not rely on the memory nor the selectivity of individual responses to questionnaires. The data were provided in batch form by the Internal Revenue Service from its Information Returns Master File in full compliance with the strict requirements regarding disclosure of personal information.

Methodology

The study seeks to measure the economic performance in 1988 of 22,091 graduates in 1984 of fourteen vocational programs in Ohio. Twelve of the programs with 20,557 graduates were secondary vocational programs. A total of 1,534 graduated from two associate programs.

Each of the vocational graduates was identified by social security number and the code of the vocational program completed. Furthermore, each of the graduates was identified by the school attended. The school location was then used to group trainees by geographical region. The State of Ohio was divided into five regions: Central, Northeast, Northwest, Southwest, and Balance of Ohio. The first four regions contain only metropolitan statistical areas. The Central Region included the Columbus Metropolitan Statistical Area (MSA); the Northeast Region: the Akron Primary Metropolitan Statistical Area (PMSA), the Canton MSA, the Cleveland PMSA, the Lorain-Elyria PMSA, Jefferson County in the Steubenville-Weirton MSA, and the Youngstown-Warren MSA. The Northwest Region included the Lima MSA and Toledo MSA, while the Southwest Region was comprised of Clermont, Hamilton and Warren counties in the Cincinnati PMSA, and the Dayton-Springfield MSA. The region "Balance of Ohio" included Mansfield MSA, Washington county in the Parkersburg-Marietta MSA, as well as all non-MSA counties in the State of Ohio. Table I-A lists these regions by component counties. Diagram I-B shows the five Ohio regions on a state map.

Under a negotiated agreement with the Internal Revenue Service, the Statistics of Income Division of IRS was provided on a magnetic tape with a list of social security numbers in sequence of the vocational education graduates coded by vocational program attended. In addition, the Internal Revenue Service was furnished on hard copy with a list of all zip codes included in each of the five Ohio geographic regions. The list was developed using the following source materials:

1. Bureau of the Budget, Office of Management and Budget, Standard Metropolitan Statistical Areas: Titles and Definitions, 1983, 1984, 1985, 1986, 1987 and 1988,
2. National Technical Information Service, U.S. Department of Commerce, Five-Digit Zip Code Area Data (from 1983, 1984, 1985, 1986, 1987 and 1988 returns), Area four, Codes 43000 through 45899,
3. U.S. Postal Service, Map: National Service Area 4 (including Ohio) showing 3-Digit Zip Code Boundaries.

The Internal Revenue Service utilized its Information Returns Master File to prepare data on the vocational education graduates. A completed table was provided by IRS for each vocational program, in each of the five Ohio regions as well as in a sixth (outside Ohio) region.

TABLE I-A

LIST OF STATE GEOGRAPHIC REGIONS

The State of Ohio was divided into five geographic regions. Four of the regions (Central, Northeast, Northwest, and Southwest) contain only metropolitan statistical areas. The fifth region, Balance of Ohio, includes the Mansfield MSA and Washington County of the Parkersburg-Marietta MSA, as well as all non-MSA counties in the State of Ohio.

The components of each of the regions are listed below:

1. **CENTRAL OHIO**
   Columbus MSA (Delaware, Fairfield, Franklin, Licking, Madison, Pickaway, and Union counties)

2. **NORTHEAST OHIO**
   Akron PMSA (Portage and Summit counties)
   Canton MSA (Carroll and Stark counties)
   Cleveland PMSA (Cuyahoga, Geauga, Lake, and Medina counties)
   Lorain-Elyria PMSA (Loraine county)
   Steubenville-Weirton MSA (Jefferson county)
   Youngstown-Warren MSA (Mahoning and Trumbull counties)

3. **NORTHWEST OHIO**
   Lima MSA (Allen and Auglaize counties)
   Toledo MSA (Fulton, Lucas, and Wood counties)

4. **SOUTHWEST OHIO**
   Cincinnati PMSA (Clermont, Hamilton, Warren counties)
   Dayton-Springfield MSA (Clark, Greene, Miami, and Montgomery counties)

5. **BALANCE OF OHIO**
   Mansfield MSA (Richland county)
   Parkersburg-Marietta MSA (Washington county)
   All Non-MSA Counties: Adams, Ashland, Ashtabula, Athens, Belmont, Brown, Butler, Champaign, Clinton, Columbiana, Coshocton, Crawford, Darke, Defiance, Erie, Fayette, Gallia, Guernsey, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Knox, Lawrence, Logan, Marion, Meigs, Mercer, Monroe, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pike, Preble, Putnam, Ross, Sandusky, Scioto, Seneca, Shelby, Tuscarawas, Van Wert, Vinton, Wayne, Williams, and Wyandot.

Diagram I-B
State Geographic Regions

The latter region included those among the vocational graduates who were identified as non-Ohio residents, since their listed zip codes were not among those identifying the five Ohio regions.

The IRS Statistics of Income Division reviewed all tables to assure that no cell contained data on less than 10 individuals, in compliance with disclosure requirements. When necessary, data cells were combined. Furthermore, all tables were scrutinized and cleared by the IRS Disclosure Division before their release.

In Chapter II, we will report on and analyze the earnings and geographic mobility of the 1984 Secondary Vocational graduates in 1988, four years following their graduation. Chapter III will deal with the income and geographic mobility of the two associate vocational programs. In each of these, the performance in 1988 of the 1984 vocational graduates will be compared with that of the 1983, 1982, 1981 and 1980 vocational graduates in 1987, 1986, 1985 and 1984, respectively. The same data base, vocational programs and analytical techniques were used for the five chronological groups of vocational graduates.

The final chapter, Chapter IV, presents a summary of the findings, conclusions and recommendations.

CHAPTER II

THE 1984 SECONDARY VOCATIONAL EDUCATION GRADUATES

CHAPTER II

THE 1984 SECONDARY VOCATIONAL EDUCATION GRADUATES

The study included 20,557 graduates in 1984 of twelve secondary vocational programs in Ohio. In this chapter, we will report on and analyze the earnings and geographic mobility of the 1984 Secondary Vocational graduates in 1988, four years following their graduation. The performance in 1988 of the 1984 Secondary Vocational graduates will be compared with that of the 1983, 1982, 1981 and 1980 Secondary Vocational graduates in 1987, 1986, 1985 and 1984, respectively.

Table II-A lists the secondary vocational programs included in the study, the number of graduates, and the percentage of females and males in each program. Diagram II-B is a bar chart of the number of completers in each of the study's twelve secondary vocational programs. Diagram II-C shows the percentage of females and males in each of the study programs, while Diagram II-D and Diagram II-E compare these figures to those of the 1983, 1982, 1981 and 1980 vocational education graduates included in the earlier studies. Table II-F presents the distribution of the 1984 Secondary Vocational education graduates by vocational program and geographical training region.

TABLE II-A

STUDY OF 1984 SECONDARY VOCATIONAL EDUCATION GRADUATES BY PROGRAM AND GENDER

VOCATIONAL PROGRAM	NUMBER OF GRADUATES	PERCENTAGE FEMALES	PERCENTAGE MALES
Agricultural Production and Horticulture	372	59.18%	40.82%
Marketing	3,886	54.17	45.83
Health Occupations Education	2,709	91.28	8.72
Home Economics Education	1,086	74.37	25.63
Accounting, Computing and Business Data Processing	3,307	81.97	18.03
General Office, Clerical, Stenographic, Secretarial, and Related Occupations	1,566	98.35	1.65
Auto Mechanics	1,359	1.70	98.30
Carpentry	487	1.20	98.80
Electronics	854	5.26	94.74
Machine Shop	943	1.77	98.23
Cosmetology	1,058	97.22	2.78
Occupational Work Experience	2,930	32.17	67.83
TOTAL	20,557	57.98%	42.02%

DIAGRAM II-B
Study of 1984 Secondary Vocational Graduates
Number of Completers by Program

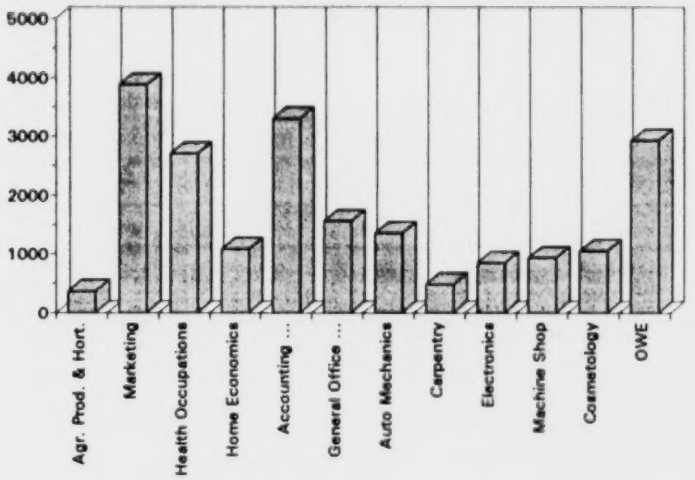

DIAGRAM II-C
Study of 1984 Secondary Vocational Graduates
Percentage of Females and Males by Program

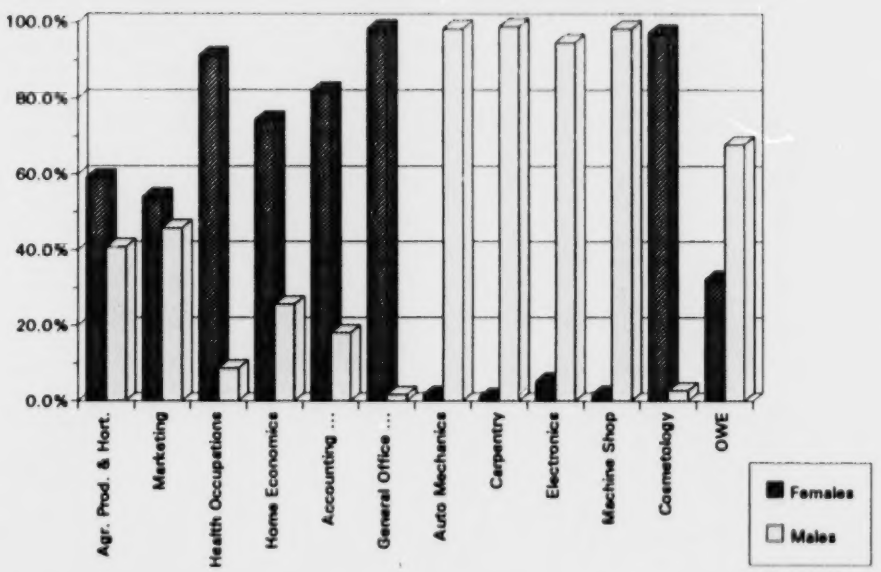

DIAGRAM II-D
Studies of 1980, 1981, 1982, 1983 and 1984 Secondary Vocational Graduates
Number of Graduates by Program

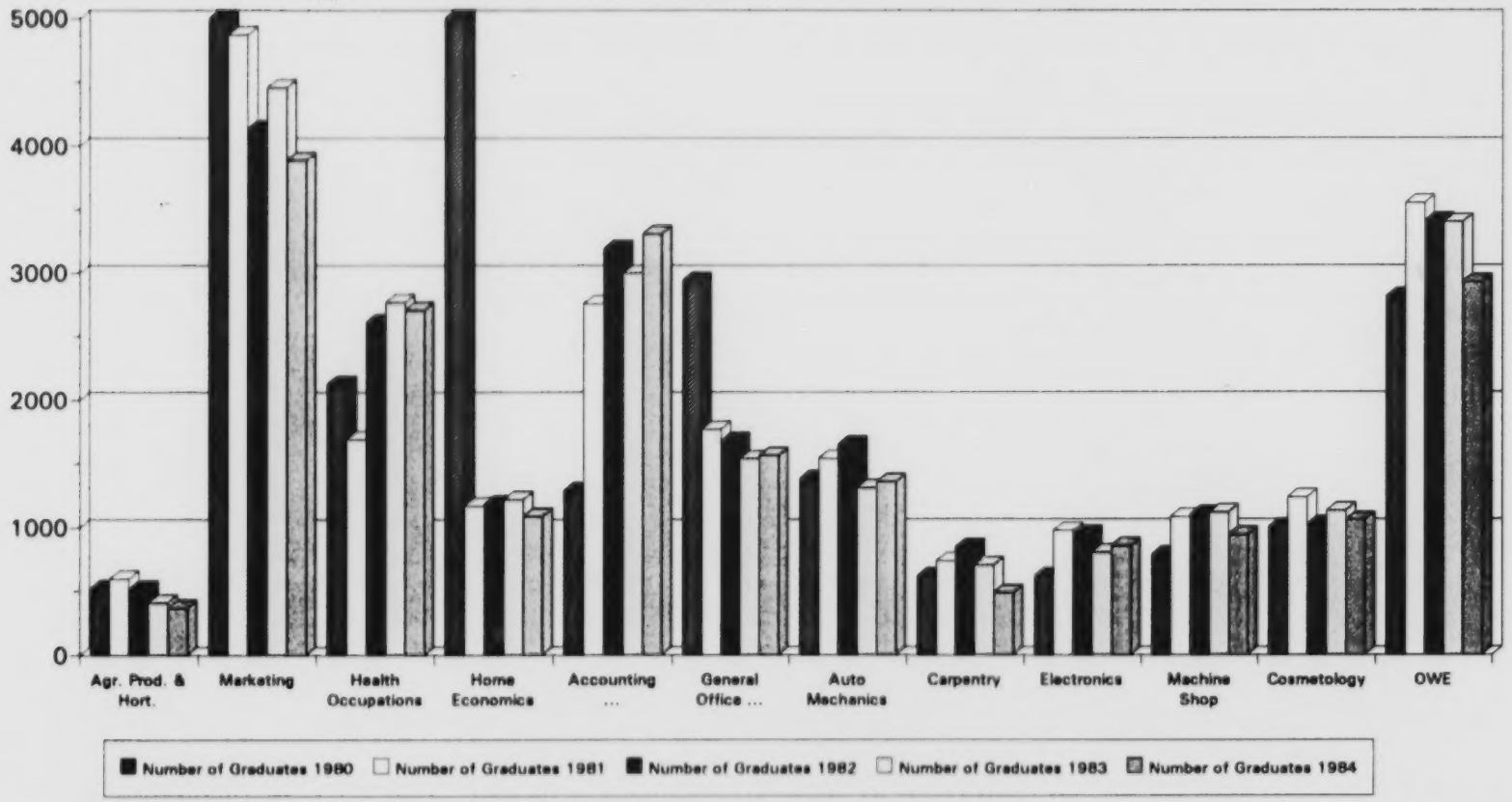

DIAGRAM II-E

Studies of 1980, 1981, 1982, 1983 and 1984 Secondary Vocational Graduates

Percentage of Females and Males by Program

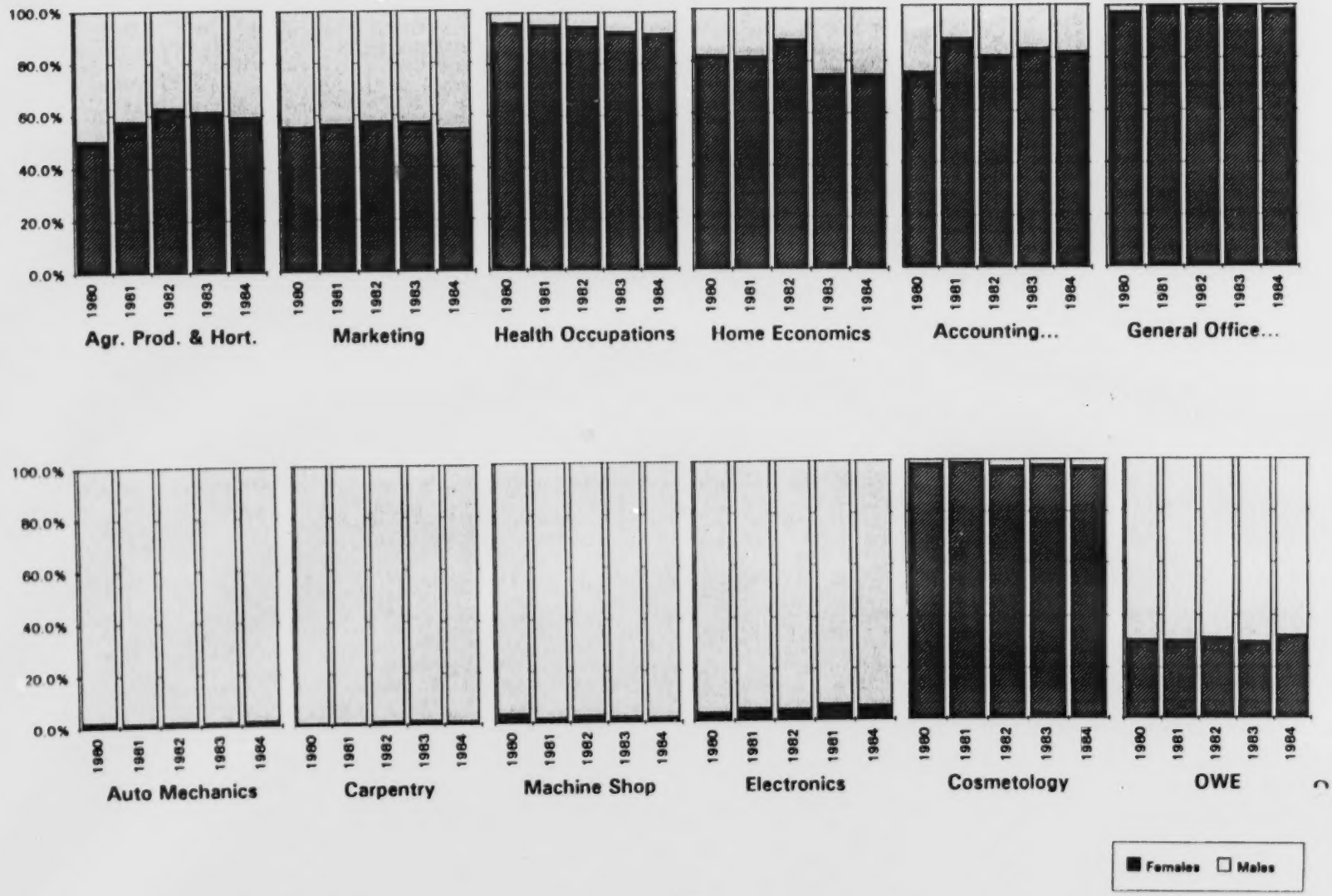

TABLE II-F

STUDY OF 1984 SECONDARY VOCATIONAL GRADUATES DISTRIBUTION BY VOCATIONAL PROGRAM AND GEOGRAPHIC REGION

VOCATIONAL EDUCATION PROGRAM	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO	ALL REGIONS
1. Agricultural Production and Horticulture	91	112	37	45	87	372
2. Marketing	211	1,484	491	834	866	3,886
3. Health Occupations Education	222	1,068	258	466	695	2,709
4. Home Economics Education	98	420	92	197	279	1,086
5. Accounting, Computing and Business Data Processing	205	1,260	324	630	888	3,307
6. General Office Clerical, Stenographic, Secretarial, and Related Occupations	45	741	83	340	557	1,766
7. Auto Mechanics	100	615	92	261	291	1,359
8. Carpentry	30	74	45	120	218	487
9. Electronics	48	416	63	175	152	854
10. Machine Shop	88	337	50	211	257	943
11. Cosmetology	74	496	44	189	255	1,058
12. Occupational Work Experience	62	1,156	267	880	565	2,930
TOTAL	1,274	8,179	1,846	4,348	5,110	20,757

A. INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES: 1988 INCOME TABULATIONS

The data provided by the Internal Revenue Service were used to determine the economic performance of the 1984 Secondary Vocational graduates four years following their graduation.

Tables IIA-1 through IIA-12 present data on the 1988 Tax Year reported income of the 1984 vocational graduates for each of the twelve Secondary programs. Reported income is the sum of wages and salaries, interest and dividends, and other income (miscellaneous income from work provided by other than as employees) as reported to the Internal Revenue Service.

Table IIA-2, for example, provides the reported income of those who completed the Marketing Program. For the entire group of completers, the mean reported income in 1988 was $11,770. Among the group, reported income varied as follows: 27.75% received less than $5,500 (a mean of $3,286); 8.32% between $5,500 and $6,999 (a mean of $6,791); another 7.85% between $7,000 and $8,499 (a mean of $8,395); 5.94% between $8,500 and $9,999 (a mean of $9,761); 10.06% between $10,000 and $11,499 (a mean of $10,790); 7.02% between $11,500 and $12,999 (a mean of $12,579); 6.65% between $13,000 and $14,499 (a mean of $14,194); 4.44% between $14,500 and $15,999 (a mean of $15,485); 6.97% between $16,000 and $18,999 (a mean of $18,586); 7.14% between $19,000 and $21,999 (a mean of $21,694); 1.55% between $22,000 and $23,999 (a mean of $23,496), and 6.31% had a reported income of at least $24,000 with a mean of $35,591.

The table also shows the distribution of the reported income among the 1984 Marketing completers who resided outside Ohio in 1988 as compared to those who resided in the state (a mean reported income of $11,675 and $11,791, respectively). The reported incomes of the Ohio residents are then shown by the region of their residence.

A tabulation of the mean reported income by program and region is given in Table IIA-13. Diagram IIA-A is a bar graph of mean reported incomes of completers of each of the twelve secondary vocational programs studied.

TABLE IIA-1
AGRICULTURE PRODUCTION AND HORTICULTURE
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	29.31%	$2,510	32.44%	$2,364	30.00%	$2,532	22.22%	$4,168			10.00%	$2,505	23.07%	$2,712	28.68%	$2,721
$5,500-6,999	9.06	6,718			10.40	6,726									11.76	6,549
$7,000-8,499	8.01	8,417	8.11	8,671	8.40	8,432	22.22	7,916			23.33	7,152	23.08	8,390	5.88	8,193
$8,500-9,999	5.23	9,854									10.00	9,315			5.15	9,493
$10,000-11,499	10.80	11,285	13.51	10,452	5.60	10,284									10.29	11,238
$11,500-12,999	8.01	12,695	10.81	11,995	10.40	11,961					26.67	11,502	30.77	12,473	8.82	12,692
$13,000-14,499	5.57	14,180	8.11	14,630	7.60	13,353	55.56	14,387							8.09	14,259
$14,500-15,999	5.92	15,570			6.00	15,092										
$16,000-18,999	6.23	18,595			10.80	17,721					30.00	18,821	23.08	17,228	6.62	16,893
$19,000-21,999	4.88	21,318														
$22,000-23,999	1.39	23,747			4.80	22,612										
$24,000 and over	5.59	35,084	27.02	24,620	6.00	31,300									14.71	25,473
TOTAL	100%	$10,971	100%	$12,017	100%	$10,785	100%	$10,679	100%	$10,322	100%	$11,564	100%	$10,376	100%	$10,816

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TABLE IIA-2
MARKETING
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	27.75%	$3,286	22.60%	$2,970	29.55%	$3,108	22.04%	$3,520	21.91%	$3,802	26.00%	$3,481	29.42%	$2,758	25.45%	$3,178
$5,500-6,999	8.32	6,791											6.86	6,910	8.76	6,470
$7,000-8,499	7.85	8,395	19.15	7,328	8.04	7,082	17.32	7,261	12.38	7,481	17.03	7,719				
$8,500-9,999	5.94	9,761			15.46	9,293			12.38	9,180			11.76	9,195	15.62	8,813
$10,000-11,499	10.06	10,790	21.54	10,283			16.54	10,304			17.96	10,268			8.88	11,008
$11,500-12,999	7.02	12,579	5.05	12,714	8.67	11,790	16.54	12,431	32.38	12,228	7.43	12,484	16.67	12,052		
$13,000-14,499	6.65	14,194	6.65	14,409	7.28	13,381					6.50	14,183			20.51	13,883
$14,500-15,999	4.44	15,485			6.65	14,827					13.62	15,030	17.65	15,529		
$16,000-18,999	6.97	18,586	11.17	16,765	12.59	17,792	11.81	16,649	12.38	17,543			6.86	18,100	7.64	17,674
$19,000-21,999	7.14	21,694	4.79	20,814			8.66	20,545			3.41	20,267			4.55	21,083
$22,000-23,999	1.55	23,496			4.06	22,305							5.88	22,070		
$24,000 and over	6.31	35,591	9.08	32,217	7.70	35,566	7.09	35,975	8.57	24,670	8.05	39,816	4.90	35,700	8.59	33,249
TOTAL	100%	$11,770	100%	$11,675	100%	$11,791	100%	$12,090	100%	$11,141	100%	$11,856	100%	$11,405	100%	$11,743

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TABLE IIA-3
HEALTH OCCUPATIONS EDUCATION
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	20.70%	$2,945	22.37%	$3,140	23.11%	$2,875	26.09%	$3,355	24.32%	$2,854	14.27%	$2,170	19.43%	$2,678	19.19%	$3,087
$5,500-6,999	6.19	6,822	4.98	6,080			4.35	6,556					4.17	6,631		
$7,000-8,499	6.79	8,285	6.47	7,779	8.30	7,010			9.00	7,618	11.85	7,702			14.13	7,290
$8,500-9,999	7.18	9,676			6.82	8,656	14.49	9,821					18.06	9,051	8.03	9,651
$10,000-11,499	6.32	11,197	12.94	10,862	7.48	10,216			16.22	10,060	13.27	10,190	5.56	10,652		
$11,500-12,999	6.83	12,378			6.54	11,736	18.84	11,846							13.88	11,904
$13,000-14,499	6.49	14,188	6.97	13,457	7.01	13,489	4.35	13,879	12.61	13,295	15.17	13,283	4.17	13,439		
$14,500-15,999	6.46	15,590			6.44	15,215	14.49	15,641			3.79	15,368				
$16,000-18,999	10.92	18,489	13.93	17,429	5.00	16,474			25.23	18,638	12.27	18,088	8.33	16,391	23.87	16,506
$19,000-21,999	9.15	21,389					17.39	21,180	12.62	21,052	11.37	20,919	25.00	21,643	13.10	21,987
$22,000-23,999	4.10	23,287			11.10	19,314										
$24,000 and over	8.87	34,265	32.34	30,993	18.20	27,850					18.01	27,595	15.28	28,786	7.80	31,183
TOTAL	100%	$13,740	100%	$16,303	100%	$13,430	100%	$11,369	100%	$12,047	100%	$14,740	100%	$14,759	100%	$13,302

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TABLE IIA-4
HOME ECONOMICS EDUCATION
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	42.03%	$3,147	39.57%	$2,960	13.39%	$3,252	25.00%	$3,331	33.33%	$3,181	34.48%	$2,780	47.06%	$3,178	36.95%	$2,907
$5,500-6,999	8.27	6,723			16.21	6,456	16.67	6,610	22.22	7,920	11.49	6,289			10.13	6,262
$7,000-8,499	9.88	8,269	8.79	7,992	19.25	7,423	33.33	7,855			10.34	8,103	35.30	9,740		
$8,500-9,999	10.75	9,490	10.99	10,001	25.77	9,475	11.11	9,215	44.45	11,411	9.20	9,508			24.30	8,706
$10,000-11,499	6.18	11,187			14.26	10,316					11.49	10,971	8.82	13,242	6.84	10,740
$11,500-12,999	5.56	12,685	17.58	13,249	11.12	12,929	13.89	12,547			9.20	12,316			5.32	12,340
$13,000-14,499	4.70	14,275									5.75	14,177			5.06	13,855
$14,500-15,999	3.97	15,234	8.79	16,945											3.29	15,236
$16,000-18,999	2.72	18,481									4.60	16,151	8.82	19,716	3.04	18,077
$19,000-21,999	2.48	21,750	14.28	25,853											2.03	21,469
$22,000-23,999	0.74	23,670														
$24,000 and over	2.72	35,226									3.45	28,448			3.04	27,915
TOTAL	100%	$8,563	100%	$10,483	100%	$8,262	100%	$8,098	100%	$7,892	100%	$8,327	100%	$7,841	100%	$8,251

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TABLE IIA-5
ACCOUNTING, COMPUTING AND BUSINESS DATA PROCESSING
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	20.45%	$2,938	22.39%	$2,927	17.57%	$2,387	20.00%	$3,001							21.80%	$3,150
$5,500-6,999	5.72	6,347	6.99	6,524	3.85	6,359			31.26%	$3,458	14.77%	$3,905	14.77%	$4,283	7.80	6,639
$7,000-8,499	7.65	7,962	6.29	7,855	5.00	7,775	14.56	7,517	8.33	8,453	14.78	8,128				
$8,500-9,999	8.15	9,213	7.69	9,358	5.89	9,216	7.27	9,344							15.98	8,895
$10,000-11,499	8.43	10,893	5.24	11,067	7.61	10,006	8.18	10,955	12.50	11,106	11.30	10,319	14.78	8,920		
$11,500-12,999	9.21	12,087	8.04	12,545	7.62	11,563	9.09	12,510					11.30	11,211	17.90	11,983
$13,000-14,499	9.14	13,772	6.64	14,122	9.54	13,174					28.10	12,495	7.83	12,984		
$14,500-15,999	8.62	15,296	7.34	15,526	10.89	14,921	29.09	16,099	18.75	13,845			20.27	14,220	15.86	15,013
$16,000-18,999	8.93	18,358	10.14	18,201	20.15	16,315					16.53	15,480	16.53	17,022		
$19,000-21,999	5.19	21,153	4.20	21,854	9.02	20,306	6.36	21,150	14.58	19,846					9.02	17,953
$22,000-23,999	3.21	23,689	15.04	31,924	2.86	24,660	5.45	27,493	14.58	27,390	7.83	19,835	7.83	21,806	7.29	21,963
$24,000 and over	5.30	32,251									6.69	28,197	6.69	31,006	4.35	31,697
TOTAL	100%	$12,140	100%	$13,556	100%	$11,944	100%	$11,934	100%	$12,656	100%	$12,453	100%	$13,712	100%	$11,751

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TABLE IIA-6
GENERAL OFFICE, CLERICAL, STENOGRAPHIC, SECRETARIAL AND RELATED OCCUPATIONS
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	21.41%	$2,981	23.64%	$2,892	21.71%	$2,928	15.72%	$2,598	28.57%	$1,462	24.85%	$3,531	23.07%	$2,368	17.68%	$3,073
$5,500-6,999	4.83	6,583	6.87	6,479	4.61	6,705	11.43	7,755			12.12	7,537			4.60	6,561
$7,000-8,499	6.87	8,014	6.11	7,942	6.96	8,234							15.39	8,707	12.95	8,947
$8,500-9,999	6.42	9,798	6.11	9,475	6.45	9,951	10.00	10,256			9.70	9,846				
$10,000-11,499	9.44	11,369	8.40	10,896	9.56	11,420			50.00	13,969	9.09	11,269	15.39	11,906	22.01	12,091
$11,500-12,999	9.82	12,899	3.82	12,653	10.48	12,968	15.71	12,407			9.09	12,688				
$13,000-14,499	9.89	14,337	6.11	14,172	10.31	14,485	10.00	14,365	21.43	17,294	10.91	14,420	46.15	15,944		
$14,500-15,999	8.61	15,779			8.63	15,901	17.14	15,813							33.98	16,373
$16,000-18,999	12.89	18,668	16.80	16,480	12.82	18,976					14.55	17,507				
$19,000-21,999	4.31	21,897	6.11	20,450	4.11	21,987	20.00	19,169							4.60	21,298
$22,000-23,999	1.81	23,791	16.03	37,981											4.18	28,240
$24,000 and over	3.70	39,829			4.36	32,487					9.69	28,751				
TOTAL	100%	$12,506	100%	$14,564	100%	$12,229	100%	$12,250	100%	$11,108	100%	$11,830	100%	$11,077	100%	$12,389

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TABLE IIA-7
AUTO MECHANICS
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean	Outside Ohio Percent/Ohio	All Ohio Percent/Mean	Central Ohio Percent/Mean	Northeast Ohio Percent/Mean	Northwest Ohio Percent/Mean	Southwest Ohio Percent/Mean	Balance of Ohio Percent/Mean
Under $5,500	18.80% $3,095	22.01% $3,478	13.01% $2,263	18.74% $3,274	26.32% $3,349	9.89% $3,762	16.14% $3,937	20.74% $3,979
$5,500-6,999	3.86 6,783	3.67 7,037	2.01 5,501			3.85 6,568		
$7,000-8,499	4.84 7,898		3.60 7,102			9.34 8,027	6.45 7,413	15.36 9,091
$8,500-9,999	7.42 9,797	19.27 10,749	7.42 8,502	10.94 9,631	36.84 11,007	14.28 10,436	8.06 9,569	
$10,000-11,499	9.02 11,276		9.27 10,056	14.06 11,603			19.35 11,982	24.12 12,865
$11,500-12,999	7.82 11,969	11.01 12,454	5.11 11,505			21.98 13,783		
$13,000-14,499	7.82 14,098	13.76 14,956	5.31 13,021	15.63 14,273	21.05 19,641			
$14,500-15,999	8.68 15,175		6.32 14,503	23.44 17,202		19.78 17,053	12.90 15,132	29.64 18,527
$16,000-18,999	11.74 18,685	18.35 19,598	18.11 16,102				11.29 18,078	
$19,000-21,999	8.51 21,676		12.26 19,112	9.38 21,484		9.89 21,776	25.81 24,997	
$22,000-23,999	4.87 23,671		10.71 22,123		15.79 35,570	10.99 27,000		10.14 28,225
$24,000 and over	6.82 38,466	11.93 41,331	6.87 26,850	7.81 27,215				
TOTAL	100% $14,140	100% $15,051	100% $13,893	100% $13,702	100% $14,687	100% $14,388	100% $14,648	100% $13,678

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TABLE IIA-8
CARPENTRY
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	20.77%	$3,741	27.50%	$4,182	15.60%	$3,914	23.08%	$4,189	13.33%	$5,261	37.50%	$2,602			17.14%	$3,918
$5,500-6,999	6.93	6,822	7.50	6,883	6.86	6,980										
$7,000-8,499	6.19	8,030			5.32	8,134	19.23	9,162	10.00	8,931			37.50%	$5,352	13.94	7,577
$8,500-9,999	5.69	9,752	10.00	9,163	5.00	8,503									15.94	10,916
$10,000-11,499	8.17	11,335	7.50	11,371	4.77	10,057	19.23	12,388								
$11,500-12,999	9.41	12,882			8.24	11,732			20.00	13,478					17.93	13,931
$13,000-14,499	8.17	14,390	25.00	13,499	8.52	14,109	15.38	14,619			62.50	17,106				
$14,500-15,999	7.18	15,788			8.52	14,626							62.50	14,787	21.51	17,454
$16,000-18,999	12.13	18,571			17.33	16,580	11.54	17,302	26.67	17,291						
$19,000-21,999	6.19	21,829	12.50	19,657	5.00	19,503			16.67	20,838					5.18	21,512
$22,000-23,999	3.97	23,792			6.32	22,124	11.54	23,113	13.33	24,040					8.36	31,865
$24,000 and over	5.20	38,264	10.00	26,472	8.52	27,793										
TOTAL	100%	$13,287	100%	$11,914	100%	$13,457	100%	$12,023	100%	$15,580	100%	$11,667	100%	$11,249	100%	$13,498

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TABLE IIA-9
ELECTRONICS
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	21.28%	$3,410	14.29%	$3,334	12.38%	$3,475	18.75%	$3,575	40.00%	$4,040	13.14%	$3,901			21.43%	$3,467
$5,500-6,999	6.01	6,572	4.09	6,526	10.10	5,563	12.50	6,085			15.15	7,651	10.00%	$6,373	7.38	6,697
$7,000-8,499	4.53	8,409	11.22	9,420	7.38	7,004							16.67	9,335	14.77	8,931
$8,500-9,999	8.09	9,148			5.70	8,724					11.11	9,670				
$10,000-11,499	8.22	11,356	15.31	11,238	7.28	10,700	25.00	11,681	30.00	13,909	6.06	11,236			14.76	11,991
$11,500-12,999	8.63	12,803	25.51	13,465	8.09	11,569					7.07	12,832	13.33	11,906		
$13,000-14,499	8.68	14,168			7.89	13,115					23.23	15,920	13.33	14,246	6.90	14,229
$14,500-15,999	4.45	15,662	3.06	16,201	6.88	14,976	31.25	17,345					20.00	16,974	25.24	18,450
$16,000-18,999	11.32	18,735			10.06	17,940			30.00	19,785						
$19,000-21,999	7.28	21,431	10.20	19,587	6.79	19,201					10.10	21,398	16.67	20,938		
$22,000-23,999	4.23	23,223	16.32	29,215	7.89	22,095					14.14	28,540	10.00	27,497	9.52	31,137
$24,000 and over	7.28	34,835			9.56	27,510	12.50	27,513								
TOTAL	100%	$13,406	100%	$14,217	100%	$13,268	100%	$13,210	100%	$11,724	100%	$14,229	100%	$15,314	100%	$12,929

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
by I.A. Ghazalah, Ohio University

TABLE IIA-10
MACHINE SHOP
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean	Outside Ohio Percent/Ohio	All Ohio Percent/Mean	Central Ohio Percent/Mean	Northeast Ohio Percent/Mean	Northwest Ohio Percent/Mean	Southwest Ohio Percent/Mean	Balance of Ohio Percent/Mean
Under $5,500	12.76% $3,740	20.29% $5,545	8.00% $3,317	7.50% $5,243		8.75% $3,752	17.90% $6,086	11.42% $3,161
$5,500-6,999	3.08 6,685		5.10 5,521	7.50 7,025		2.19 6,209		
$7,000-8,499	4.66 8,147	13.15 9,091	7.87 7,987			6.57 8,538	8.96 8,373	7.11 7,823
$8,500-9,999	6.45 8,977		4.37 8,762	7.50 9,248			5.97 9,555	7.97 9,662
$10,000-11,499	4.90 11,169	12.52 11,926	2.13 10,662			8.03 11,080	16.42 12,663	3.88 11,210
$11,500-12,999	6.09 11,975		4.38 11,859	7.50 12,632		13.14 13,599		6.03 12,722
$13,000-14,499	6.45 14,339	14.86 14,761	6.29 13,198	25.00 16,962	26.66% $13,445			6.68 14,157
$14,500-15,999	6.45 15,636		6.29 14,603			21.90 17,447	25.37 17,814	21.56 17,506
$16,000-18,999	14.81 18,901	25.67 20,502	14.13 18,236		46.67 17,492			
$19,000-21,999	13.14 21,724		13.80 21,880	15.00 21,593		13.14 21,266	14.93 21,511	35.35 25,330
$22,000-23,999	6.47 23,289		7.23 22,070	30.00 27,361		26.28 27,412		
$24,000 and over	14.74 31,966	13.51 33,408	20.41 27,300		26.67 32,580		10.45 29,870	
TOTAL	100% $16,724	100% $15,783	100% $16,817	100% $18,249	100% $20,437	100% $17,521	100% $15,342	100% $16,563

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
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TABLE IIA-11
COSMETOLOGY
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean		Outside Ohio Percent/Ohio		All Ohio Percent/Mean		Central Ohio Percent/Mean		Northeast Ohio Percent/Mean		Northwest Ohio Percent/Mean		Southwest Ohio Percent/Mean		Balance of Ohio Percent/Mean	
Under $5,500	37.89%	$3,337	40.30%	$4,149	37.24%	$3,256	34.09%	$1,972	33.34%	$3,697	33.03%	$2,634	31.05%	$3,241	29.84%	$3,038
$5,500-6,999	9.20	6,922			9.09	6,921					8.70	6,353	17.24	6,427	11.73	6,517
$7,000-8,499	13.40	7,934	25.37	7,466	7.24	7,051	20.46	7,436	33.33	7,833	13.04	8,013	13.79	7,892		
$8,500-9,999	9.44	9,483			16.64	9,416					14.78	9,435	10.34	9,231	38.01	9,203
$10,000-11,499	9.13	10,343	17.91	10,444	8.12	10,121	20.45	10,903			6.96	11,127	10.34	10,411		
$11,500-12,999	6.64	12,234			7.62	11,961	11.36	12,858	33.33	11,785	8.70	12,684			6.89	12,159
$13,000-14,499	3.40	14,168	11.94	13,118	1.03	13,782	6.82	14,400							4.59	13,819
$14,500-15,999	3.61	15,687			3.74	15,448	6.82	16,795			12.18	16,054			7.15	17,868
$16,000-18,999	2.97	18,663	4.48	17,859	5.67	17,651							17.24	18,525		
$19,000-21,999	1.69	21,662			1.29	21,894					2.61	26,560				
$22,000-23,999	0.71	23,697														
$24,000 and over	1.42	34,014			2.32	29,281									1.79	30,416
TOTAL	100%	$8,283	100%	$7,803	100%	$8,334	100%	$8,011	100%	$7,771	100%	$8,389	100%	$8,427	100%	$8,463

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
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TABLE IIA-12
OCCUPATIONAL WORK EXPERIENCE
1984 SECONDARY VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean	Outside Ohio Percent/Ohio	All Ohio Percent/Mean	Central Ohio Percent/Mean	Northeast Ohio Percent/Mean	Northwest Ohio Percent/Mean	Southwest Ohio Percent/Mean	Balance of Ohio Percent/Mean
Under $5,500	40.47% $3,075	40.18% $3,615	31.41% $2,848	36.16% $2,877	33.34% $2,781	26.13% $3,493	32.14% $2,711	36.38% $2,778
$5,500-6,999	6.72 6,917		10.12 5,922	3.61 6,613	19.44 7,032	32.43 7,765	25.00 7,579	18.07 7,140
$7,000-8,499	7.32 8,360		10.50 8,315					
$8,500-9,999	7.99 9,687	27.76 9,797	6.23 9,091	30.12 10,274				9.48 9,346
$10,000-11,499	5.44 11,472		8.56 10,878			8.11 10,491		
$11,500-12,999	6.27 12,785	7.42 12,573	6.00 12,310	13.25 13,975	11.11 11,714	10.36 11,970	25.00 14,054	17.70 11,968
$13,000-14,499	4.92 14,287		6.14 13,888		8.33 14,454	5.86 13,399		
$14,500-15,999	5.14 15,692	15.03 18,369	4.84 15,402	13.25 17,535		11.26 16,079		13.85 17,016
$16,000-18,999	6.44 18,569		9.38 17,090					
$19,000-21,999	4.07 21,765		3.00 20,353		27.78 21,813	3.15 19,894	17.86 22,316	
$22,000-23,999	2.48 23,689	9.61 28,353		3.61 21,185		2.70 28,195		4.52 26,056
$24,000 and over	2.74 34,562		3.82 28,997					
TOTAL	100% $9,652	100% $10,598	100% $9,523	100% $9,313	100% $10,859	100% $9,505	100% $10,265	100% $8,840

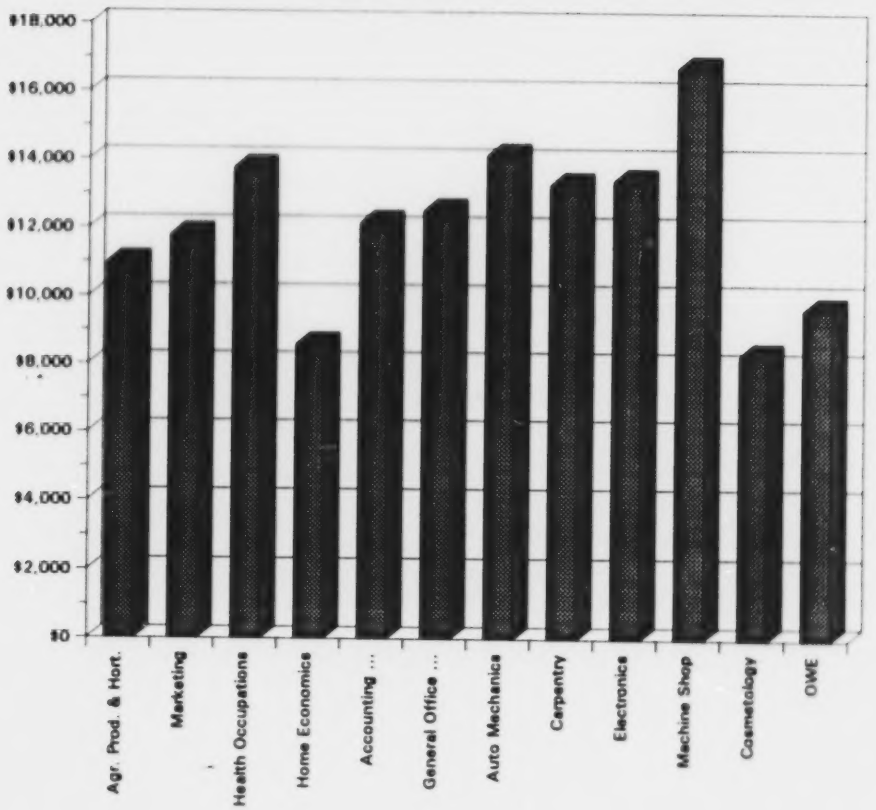
1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
by I.A. Ghazalah, Ohio University

TABLE IIA-13

MEAN REPORTED INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$10,971	$12,017	$10,785	$10,679	$10,322	$11,564	$10,376	$10,816
Marketing	11,770	11,675	11,791	12,090	11,141	11,856	11,405	11,743
Health Occupations Education	13,740	16,303	13,430	11,369	12,047	14,740	14,759	13,302
Home Economics Education	8,563	10,483	8,262	8,098	7,892	8,327	7,841	8,251
Accounting, Computing and Business Data Processing	12,140	13,556	11,944	11,934	12,656	12,453	13,712	11,751
General Office Clerical, Stenographic, Secretarial, and Related Occupations	12,506	14,564	12,229	12,250	11,108	11,830	11,077	12,389
Auto Mechanics	14,140	15,051	13,893	13,702	14,687	14,388	14,648	13,678
Carpentry	13,287	11,914	13,457	12,023	15,580	11,667	11,249	13,498
Electronics	13,406	14,217	3,268	13,210	11,724	14,229	15,314	12,929
Machine Shop	16,724	15,783	16,817	18,249	20,437	17,521	15,342	16,653
Cosmetology	8,283	7,803	8,334	8,011	7,771	8,389	8,427	8,463
Occupational Work Experience	9,652	10,598	9,523	9,313	10,859	9,505	10,265	8,840

DIAGRAM IIA-A
1988 Mean Income of 1984 Secondary Vocational Graduates by Program



B. GEOGRAPHIC MOBILITY OF 1984 SECONDARY VOCATIONAL GRADUATES

The mobility patterns of Secondary Vocational graduates can be analyzed by comparing their residence in 1988 to that of 1984, the year in which they completed their programs.

Each vocational graduate was identified by the zip code of the school attended in 1984. Using the geographical regional classification of the State based on zip codes, we were able to determine for each vocational program the number of graduates who resided in each of the five regions of the State of Ohio (Central, Northeast, Northwest, Southwest and Balance of Ohio) in 1988.

The group data on vocational graduates provided by the Internal Revenue Service for 1988 were classified by the same geographical regions within the State as well as a sixth region, out-of-state, for each of the vocational programs. We were thus able to trace the net mobility of the Secondary Vocational graduates between 1984 and 1988.

For each of the vocational programs, the State's retention rate was obtained by calculating the percentage of the total number of the 1984 graduates who in 1988 resided in any of the Ohio regions. Table IIB-1 shows the retention rate for each of the twelve Secondary Vocational programs as well as for all of these programs combined. The retention rate of all twelve Secondary programs is 87.01%, indicating that 12.99% of the 1984 graduates of these programs were out-of-state residents in 1988. The table also compares these retention rates to those for the 1983, 1982, 1981 and 1980 Secondary Vocational graduates in 1987, 1986, 1985 and 1984, respectively. Diagram IIB-A shows the retention rates for each of the five groups of vocational graduates.

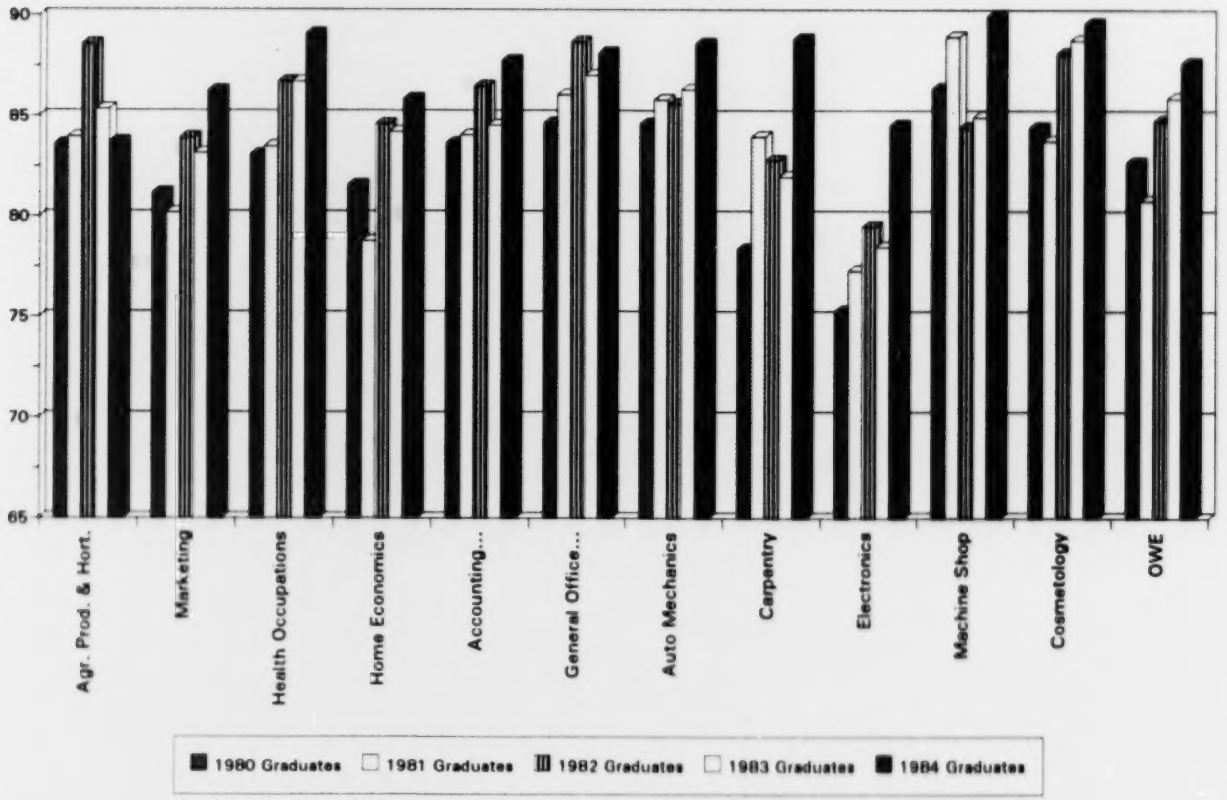
It should be noted that net retention rates are calculated on the basis of residence. Therefore, retention by the State included those who resided in Ohio but worked out of state and did not include out-of-state residents whose work place was in Ohio.

TABLE IIB-1

STATE RETENTION RATES OF 1984, 1983, 1982, 1981 AND 1980 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM

VOCATIONAL PROGRAM	Percent of 1984 Graduates Who Maintained Residence in Ohio in 1988	Percent of 1983 Graduates Who Maintained Residence in Ohio in 1987	Percent of 1982 Graduates Who Maintained Residence in Ohio in 1986	Percent of 1981 Graduates Who Maintained Residence in Ohio in 1985	Percent of 1980 Graduates Who Maintained Residence in Ohio in 1984
Agricultural Production and Horticulture	83.72%	85.35%	88.58%	83.98%	83.61%
Marketing	86.26%	83.17%	83.95%	80.19%	81.18%
Health Occupations Education	89.09%	86.72%	86.73%	83.50%	83.08%
Home Economics Education	85.86%	84.24%	84.60%	78.81%	81.57%
Accounting, Computing and Business Data Processing	87.74%	84.55%	86.48%	84.06%	83.65%
General Office Clerical, Stenographic, Secretarial, and Related Occupations	88.13%	87.03%	88.68%	86.07%	84.67%
Auto Mechanics	88.61%	86.31%	85.61%	85.80%	84.64%
Carpentry	88.83%	81.99%	82.81%	83.97%	78.37%
Electronics	84.55%	78.49%	79.49%	77.30%	75.28%
Machine Shop	89.98%	84.96%	84.43%	88.95%	86.37%
Cosmetology	89.59%	88.76%	88.12%	83.77%	84.43%
Occupational Work Experience	87.64%	85.90%	84.76%	80.81%	82.69%
TOTAL	87.01%	85.42%	84.46%	83.22%	82.50%

DIAGRAM IIB-A
State Retention Rates of 1980, 1981, 1982, 1983 and 1984 Secondary Vocational Graduates
Four Years After Graduation
by Vocational Program



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C. INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES: COMPARISON WITH EQUIVALENT GROUPS

Income data on the 1984 graduates of secondary vocational programs for the 1988 Tax Year may be analyzed using baseline data on a comparable group, i.e., one with the same age bracket and educational achievement.

The U.S. Bureau of the Census data on 1988 money income of persons in the United States[1] can be used as a baseline with appropriate adjustments for the U.S. – Ohio and Ohio-regional income relatives. In 1988, earnings in the United States of males in the 18-24 age group with four years of high school education had a mean of $10,956. The equivalent figure for females was $7,600

In order to carry out the comparison between earnings of graduates of vocational programs in the study and those of the comparable group in the general population, the following procedures were utilized:

1. For each of the twelve secondary vocational programs, a U.S. basic comparison figure of earnings was calculated using the gender breakdown of graduates (See Table II-A) as weights. For example, the basic 1988 U.S. comparison figure of $8,979 for graduates of Agricultural Production and Horticulture was calculated by multiplying 0.5918 (the proportion of females) times $7,600 (the female earnings figure) and adding the result to that of multiplying 0.4082 (the proportion of males) times $10,956 (the male earnings figure).
2. Bureau of the Census money income data for the applicable age groups and years of schooling are nationwide data. Therefore, in order to provide an appropriate comparison of money incomes of vocational graduates to earners in the general population within the State of Ohio and within the five regions of the State, the money income data by program and region were adjusted using income relatives between the U.S. and Ohio and between the U.S. and each of Ohio's five geographical regions. The income relative for each region was calculated using a

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[1] U.S. Department of Commerce, Bureau of the Census, Current Population Survey, Unpublished Data (Income Statistics Branch).

population-weighted average of income relatives of component counties based on 1988 per capita income estimates for Ohio counties. Each 1988 mean reported income figure for the 1984 Secondary Vocational graduates included in the study (See Table IIA-13) was then divided by the ratio of the applicable income level for the region (or the State as a whole) to that of the U.S.

3. Each of these adjusted reported income figures for Secondary Vocational graduates was then divided by the 1988 money income applicable to the program as described in 1 above.

The results are shown in Table IIC-1. The ratios of the mean incomes in 1988 of the 1984 Secondary Vocational graduates to the 1988 incomes of the comparable group (the same age bracket, educational achievement and geographic region) are listed by vocational program and region. The Marketing Program can be used to illustrate the results. For all 1984 graduates of the program, the ratio of 1.37 indicates that the mean 1988 income was 37% higher than the 1988 mean income for the comparable group by age and educational achievement. For those completers of the program who resided outside Ohio, the ratio of 1.28 indicates they received a mean income 28% higher than the 1988 mean for the comparable group by age and educational achievement. For all 1984 graduates who lived in Ohio, the mean income was 38% higher than the comparable group in Ohio. The remaining ratios of 1.35, 1.23, 1.37, 1.25 and 1.63 indicate a higher percentage mean income of 35%, 23%, 37%, 25%, and 63% for those who resided in Central Ohio, Northeast Ohio, Northwest Ohio, Southwest Ohio, and Balance of Ohio, respectively.

TABLE IIC-1

RATIOS OF MEAN REPORTED INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES TO MEAN GENERAL INCOME BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.30	1.34	1.29	1.22	1.16	1.36	1.15	1.53
Marketing	1.37	1.28	1.38	1.35	1.23	1.37	1.25	1.63
Health Occupations Education	1.85	2.06	1.81	1.46	1.54	1.97	1.86	2.14
Home Economics Education	1.08	1.24	1.05	1.01	0.99	1.04	0.98	1.14
Accounting, Computing and Business Data Processing	1.57	1.65	1.56	1.49	1.56	1.60	1.67	1.82
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.74	1.90	1.71	1.64	1.47	1.63	1.44	2.05
Auto Mechanics	1.39	1.40	1.38	1.30	1.38	1.41	1.36	1.61
Carpentry	1.29	1.09	1.32	1.13	1.44	1.13	1.03	1.57
Electronics	1.32	1.32	1.32	1.25	1.10	1.39	1.42	1.52
Machine Shop	1.63	1.45	1.65	1.71	1.89	1.69	1.41	2.10
Cosmetology	1.14	1.02	1.16	1.07	1.02	1.15	1.09	1.39
Occupational Work Experience	1.05	1.07	1.03	0.99	1.11	1.02	1.04	1.12

D. INCOME OF 1984, 1983, 1982, 1981 AND 1980 SECONDARY VOCATIONAL GRADUATES FOUR YEARS FOLLOWING THEIR GRADUATION: A COMPARISON

The study has focused on 1988, which marks four years following the graduation of the 1984 Secondary Vocational graduates. The purpose of this section is to compare the mean incomes in 1988 of the 1984 vocational graduates with those of the 1983, 1982, 1981 and 1980 vocational graduates in 1987, 1986, 1985 and 1984, respectively. The five groups of vocational education graduates will be compared at the same point in their respective working paths, four years after their graduation.

Tables IID-1, IID-2, IID-3, IID-4 and IID-5 show the mean income by vocational program and region of 1984, 1983, 1982, 1981 and 1980 Secondary Vocational graduates in 1988, 1987, 1986, 1985 and 1984, respectively.

Table IID-6 and Diagram IID-A provide a comparison of the mean incomes of the five groups of vocational education graduates at the same point in their respective working path, four years after their vocational graduation.

TABLE IID-1

MEAN REPORTED INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$10,971	$12,017	$10,785	$10,679	$10,322	$11,564	$10,376	$10,816
Marketing	11,770	11,675	11,791	12,090	11,141	11,856	11,405	11,743
Health Occupations Education	13,740	16,303	13,430	11,369	12,047	14,740	14,759	13,302
Home Economics Education	8,314	10,178	8,021	7,230	6,863	8,327	7,841	8,251
Accounting, Computing and Business Data Processing	12,140	13,556	11,944	11,934	12,656	12,453	13,712	11,751
General Office Clerical, Stenographic, Secretarial, and Related Occupations	12,506	14,564	12,229	12,250	11,108	11,830	11,077	12,389
Auto Mechanics	14,140	15,051	13,893	13,702	14,687	14,388	14,648	13,678
Carpentry	13,287	11,914	13,457	12,023	15,580	11,667	11,249	13,498
Electronics	13,406	14,217	13,268	13,210	11,724	14,229	15,314	12,929
Machine Shop	16,724	15,783	16,817	18,249	20,437	17,521	15,342	16,653
Cosmetology	8,283	7,803	8,334	7,283	6,939	8,389	8,427	8,463
Occupational Work Experience	9,106	9,998	8,984	8,467	10,859	9,505	10,265	8,840

TABLE IID-2

MEAN INCOME OF 1983 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1987 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$9,565	$10,106	$9,466	$8,717	$8,719	$8,440	$8,886	$10,148
Marketing	11,164	12,086	11,017	12,004	11,229	11,809	10,273	10,738
Health Occupations Education	12,827	14,042	12,705	10,058	12,748	14,637	13,369	12,552
Home Economics Education	8,342	10,217	18,019	8,275	8,138	7,555	7,302	8,118
Accounting, Computing and Business Data Processing	11,061	11,697	10,988	10,195	12,047	11,167	11,456	10,958
General Office Clerical, Stenographic, Secretarial, and Related Occupations	11,162	11,809	11,097	11,589	10,982	11,205	11,703	11,020
Auto Mechanics	12,750	13,325	12,660	13,787	12,946	12,404	13,130	12,597
Carpentry	12,880	12,011	13,406	13,636	15,150	14,261	12,648	13,299
Electronics	13,756	14,215	13,627	14,784	14,599	15,982	15,526	12,872
Machine Shop	15,638	13,894	16,311	17,915	15,390	17,113	15,224	16,039
Cosmetology	7,770	7,579	7,793	7,786	8,799	7,931	8,315	7,680
Occupational Work Experience	9,898	11,122	9,698	10,715	10,412	10,081	9,848	9,572

TABLE IID-3

MEAN INCOME OF 1982 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1986 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$11,662	$13,015	$11,390	$11,993	$10,817	$12,241	$11,877	$11,002
Marketing	12,455	12,207	12,502	12,977	13,096	12,236	12,512	12,131
Health Occupations Education	11,687	12,234	11,605	10,010	12,141	12,446	12,697	11,215
Home Economics Education	8,167	9,933	7,795	7,099	8,294	7,913	7,038	8,102
Accounting, Computing and Business Data Processing	11,987	12,577	11,819	12,084	12,094	10,988	12,632	11,609
General Office Clerical, Stenographic, Secretarial, and Related Occupations	10,849	11,167	10,779	9,216	10,892	9,250	10,718	10,127
Auto Mechanics	13,975	13,888	13,989	13,840	13,599	13,231	15,485	13,704
Carpentry	13,867	14,992	13,634	14,148	13,935	12,316	14,012	13,336
Electronics	13,569	14,048	13,315	15,578		13,426	12,898	12,747
Machine Shop	15,714	13,572	16,115	15,278	15,383	16,188	16,014	15,673
Cosmetology	8,378	9,729	8,320	8,264	8,995	8,125	8,772	8,076
Occupational Work Experience	10,243	12,054	9,852	10,040	9,988	9,299	9,394	9,137

TABLE IID-4

MEAN INCOME OF 1981 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1985 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$10,185	$8,594	$10,873	$9,979	$11,547	$9,288	$10,920	$11,193
Marketing	10,399	9,743	10,752	10,392	11,700	9,467	9,352	10,370
Health Occupations Education	11,179	9,396	11,890	10,003	13,254	11,758	12,020	10,821
Home Economics Education	8,165	8,063	8,455	8,142	8,141	8,599	7,879	8,683
Accounting, Computing and Business Data Processing	10,557	8,677	10,252	9,828	10,774	10,524	11,402	10,892
General Office Clerical, Stenographic, Secretarial, and Related Occupations	10,449	10,007	10,825	10,616	11,086	10,540	11,857	10,701
Auto Mechanics	12,921	11,446	13,332	12,297	13,491	12,904	14,418	12,923
Carpentry	12,865	11,622	13,261	12,370	13,512	12,406	12,513	13,933
Electronics	12,613	12,135	12,944	14,223		12,765	13,251	11,503
Machine Shop	14,454	13,868	14,698	13,923	16,328	13,683	15,807	13,844
Cosmetology	7,919	6,986	8,855	7,434	8,626	8,109	9,166	7,796
Occupational Work Experience	9,633	9,250	10,194	9,706	11,009	9,313	10,537	9,036

TABLE IID-5

MEAN INCOME OF 1980 SECONDARY VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1984 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	$9,799	$12,352	$8,609	$7,675	$10,310	$8,073	$9,017	$11,193
Marketing	9,944	10,709	9,764	10,595	8,872	9,942	12,247	9,505
Health Occupations Education	10,744	10,722	10,564	9,783	11,647	11,086	11,218	10,443
Home Economics Education	8,147	9,259	7,900	8,362	10,193	7,944	6,918	7,671
Accounting, Computing and Business Data Processing	10,373	9,345	10,479	9,326	12,124	12,299	11,180	10,273
General Office Clerical, Stenographic, Secretarial, and Related Occupations	9,954	9,612	10,014	8,300	11,029	9,743	10,077	10,099
Auto Mechanics	12,222	11,291	12,369	11,449	15,788	14,744	15,549	11,852
Carpentry	11,898	11,828	11,850	11,845	14,969	13,749	12,167	11,608
Electronics	12,496	13,133	12,289	13,864	16,579	12,566	13,030	11,993
Machine Shop	13,685	12,589	13,833	16,311	17,716	14,226	16,448	13,224
Cosmetology	7,785	7,325	7,764	6,578	5,646	6,893	11,206	7,803
Occupational Work Experience	9,168	10,091	8,951	9,865	10,947	8,912	8,548	8,869

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TABLE IID-6

MEAN INCOME OF 1984, 1983, 1982, 1981 AND 1980 SECONDARY VOCATIONAL EDUCATION GRADUATES FOUR YEARS AFTER GRADUATION BY VOCATIONAL PROGRAM

VOCATIONAL PROGRAM	Mean Income in 1988 of 1984 Secondary Vocational Graduates	Mean Income in 1987 of 1983 Secondary Vocational Graduates	Mean Income in 1986 of 1982 Secondary Vocational Graduates	Mean Income in 1985 of 1981 Secondary Vocational Graduates	Mean Income in 1984 of 1980 Secondary Vocational Graduates
Agricultural Production and Horticulture	$10,971	$9,565	$11,662	$10,185	$9,799
Marketing	$11,770	$11,164	$12,455	$10,399	$9,944
Health Occupations Education	$13,740	$12,827	$11,687	$11,179	$10,744
Home Economics Education	$8,563	$8,342	$8,167	$8,165	$8,147
Accounting, Computing and Business Data Processing	$12,140	$11,061	$11,987	$10,557	$10,373
General Office Clerical, Stenographic, Secretarial, and Related Occupations	$12,506	$11,162	$10,849	$10,449	$9,954
Auto Mechanics	$14,140	$12,750	$13,975	$12,921	$12,222
Carpentry	$13,287	$12,880	$13,867	$12,865	$11,898
Electronics	$13,406	$13,756	$13,569	$12,613	$12,496
Machine Shop	$16,724	$15,638	$15,714	$14,454	$13,685
Cosmetology	$8,283	$7,770	$8,378	$7,919	$7,785
Occupational Work Experience	$9,652	$9,898	$10,243	$9,168	$9,168

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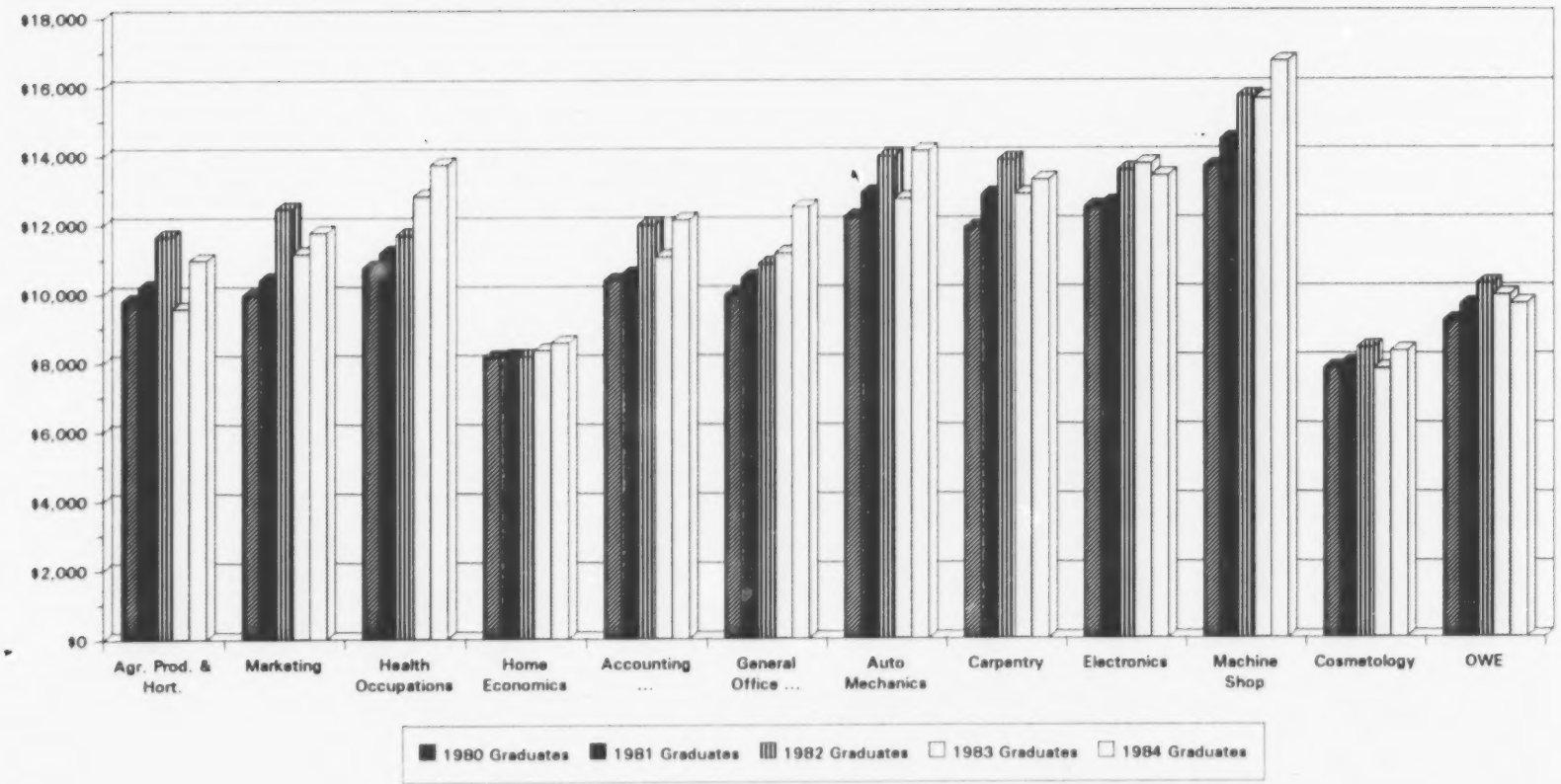
DIAGRAM IID-A
Mean Income of 1980, 1981, 1982, 1983 and 1984 Secondary Vocational Graduates
Four Years After Graduation
by Vocational Program



E. INCOME OF 1984, 1983, 1982, 1981 AND 1980 SECONDARY VOCATIONAL GRADUATES FOUR YEARS FOLLOWING GRADUATION: COMPARISON WITH EQUIVALENT GROUPS

A final comparison between the income performance of the 1984, 1983, 1982, 1981 and 1980 vocational graduates was conducted by reference to the comparable group in the general population.

Table IIE-1 shows the ratios of mean incomes in 1988 of the 1984 Secondary Vocational graduates to the 1988 mean incomes of the comparable group in the general population (the same age bracket, educational achievement and geographic region) by vocational program and region. Tables IIE-2 through IIE-5 show the equivalent ratios in 1987, 1986, 1985 and 1984 of the 1983, 1982, 1981 and 1980 Secondary Vocational graduates, respectively.

Table IIE-6 and Diagram IIE-A show the ratios of mean incomes of Secondary Vocational graduates (by program) to the mean incomes of comparable groups for the 1980-1984 completers. This provides a comparison of the ratios of mean incomes to the mean incomes of comparable groups at the same point in the career path of the five groups of vocational graduates, i.e., four years after completion of their programs.

TABLE IIE-1

RATIOS OF MEAN REPORTED INCOME OF 1984 SECONDARY VOCATIONAL GRADUATES TO MEAN GENERAL INCOME BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.30	1.34	1.29	1.22	1.16	1.36	1.15	1.53
Marketing	1.37	1.28	1.38	1.35	1.23	1.37	1.25	1.63
Health Occupations Education	1.85	2.06	1.81	1.46	1.54	1.97	1.86	2.14
Home Economics Education	1.08	1.24	1.05	1.01	0.99	1.04	0.98	1.14
Accounting, Computing and Business Data Processing	1.57	1.65	1.56	1.49	1.56	1.60	1.67	1.82
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.74	1.90	1.71	1.64	1.47	1.63	1.44	2.05
Auto Mechanics	1.39	1.40	1.38	1.30	1.38	1.41	1.36	1.61
Carpentry	1.29	1.09	1.32	1.13	1.44	1.13	1.03	1.57
Electronics	1.32	1.32	1.65	1.25	1.10	1.39	1.42	1.52
Machine Shop	1.63	1.45	1.16	1.71	1.89	1.69	1.41	2.10
Cosmetology	1.14	1.02	1.03	1.07	1.02	1.15	1.09	1.39
Occupational Work Experience	1.05	1.07	1.11	0.99	1.11	1.02	1.04	1.12

TABLE IIE-2

RATIOS OF MEAN INCOME IN 1987 OF 1983 SECONDARY VOCATIONAL GRADUATES TO MEAN INCOME OF COMPARABLE GROUP BY VOCATIONAL PROGRAM AND REGION

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.20	1.21	1.19	1.04	1.06	1.05	1.04	1.40
Marketing	1.38	1.42	1.37	1.41	1.35	1.45	1.19	1.47
Health Occupations Education	1.79	1.88	1.79	0.99	1.73	2.04	1.75	1.94
Home Economics Education	1.10	1.28	1.06	1.03	1.04	1.01	0.99	1.18
Accounting, Computing and Business Data Processing	1.50	1.51	1.50	1.31	1.58	1.50	1.45	1.64
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.60	1.62	1.60	1.58	1.53	1.60	1.57	1.75
Auto Mechanics	1.33	1.33	1.33	1.37	1.31	1.29	1.28	1.45
Carpentry	1.35	1.20	1.41	1.35	1.54	1.49	1.24	1.54
Electronics	1.45	1.44	1.45	1.49	1.50	1.68	1.54	1.49
Machine Shop	1.64	1.39	1.72	1.78	1.57	1.79	1.49	1.86
Cosmetology	1.11	1.03	1.12	1.05	1.22	1.13	1.11	1.21
Occupational Work Experience	1.12	1.21	1.11	1.15	1.15	1.14	1.05	1.20

TABLE IIE-3

RATIOS OF MEAN INCOME IN 1986 OF 1982 SECONDARY VOCATIONAL GRADUATES TO MEAN INCOME OF COMPARABLE GROUP BY VOCATIONAL PROGRAM AND REGION

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.55	1.64	1.51	1.51	1.39	1.68	1.63	1.71
Marketing	1.61	1.50	1.62	1.60	1.64	1.64	1.51	1.84
Health Occupations Education	1.75	1.74	1.74	1.42	1.76	1.92	1.77	1.97
Home Economics Education	1.19	1.37	1.14	0.99	1.17	1.19	0.96	1.38
Accounting, Computing and Business Data Processing	1.69	1.69	1.68	1.63	1.66	1.60	1.67	1.93
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.65	1.62	1.64	1.33	1.61	1.46	1.52	1.81
Auto Mechanics	1.50	1.42	1.51	1.42	1.42	1.38	1.55	1.73
Carpentry	1.49	1.53	1.45	1.45	1.46	1.37	1.40	1.68
Electronics	1.46	1.46	1.45	1.61		1.41	1.31	1.62
Machine Shop	1.70	1.40	1.73	1.57	1.61	1.81	1.61	1.99
Cosmetology	1.26	1.40	1.25	1.19	1.32	1.27	1.24	1.43
Occupational Work Experience	1.21	1.34	1.17	1.13	1.14	1.07	1.04	1.27

TABLE IIE-4

RATIOS OF MEAN INCOME IN 1985 OF 1981 SECONDARY VOCATIONAL GRADUATES TO MEAN INCOME OF COMPARABLE GROUP BY VOCATIONAL PROGRAM AND REGION

VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.40	1.13	1.49	1.31	1.53	1.27	1.40	1.85
Marketing	1.43	1.27	1.47	1.36	1.54	1.29	1.19	1.71
Health Occupations Education	1.82	1.48	1.97	1.58	2.11	1.93	1.85	2.15
Home Economics Education	1.24	1.16	1.28	1.18	1.19	1.29	1.11	1.58
Accounting, Computing and Business Data Processing	1.64	1.28	1.70	1.46	1.57	1.62	1.61	2.03
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.72	1.48	1.78	1.67	1.76	1.72	1.82	2.12
Auto Mechanics	1.46	1.56	1.51	1.32	1.47	1.45	1.52	1.75
Carpentry	1.45	1.55	1.50	1.33	1.43	1.39	1.31	1.89
Electronics	1.44	1.30	1.48	1.55		1.44	1.41	1.58
Machine Shop	1.64	1.49	1.66	1.50	1.78	1.53	1.66	1.88
Cosmetology	1.30	1.09	1.45	1.16	1.36	1.32	1.40	1.53
Occupational Work Experience	1.20	1.10	1.27	1.15	1.32	1.15	1.22	1.35

TABLE IIE-5

RATIOS OF MEAN INCOME IN 1984 OF 1980 SECONDARY VOCATIONAL GRADUATES TO MEAN INCOME OF COMPARABLE GROUP BY VOCATIONAL PROGRAM AND REGION

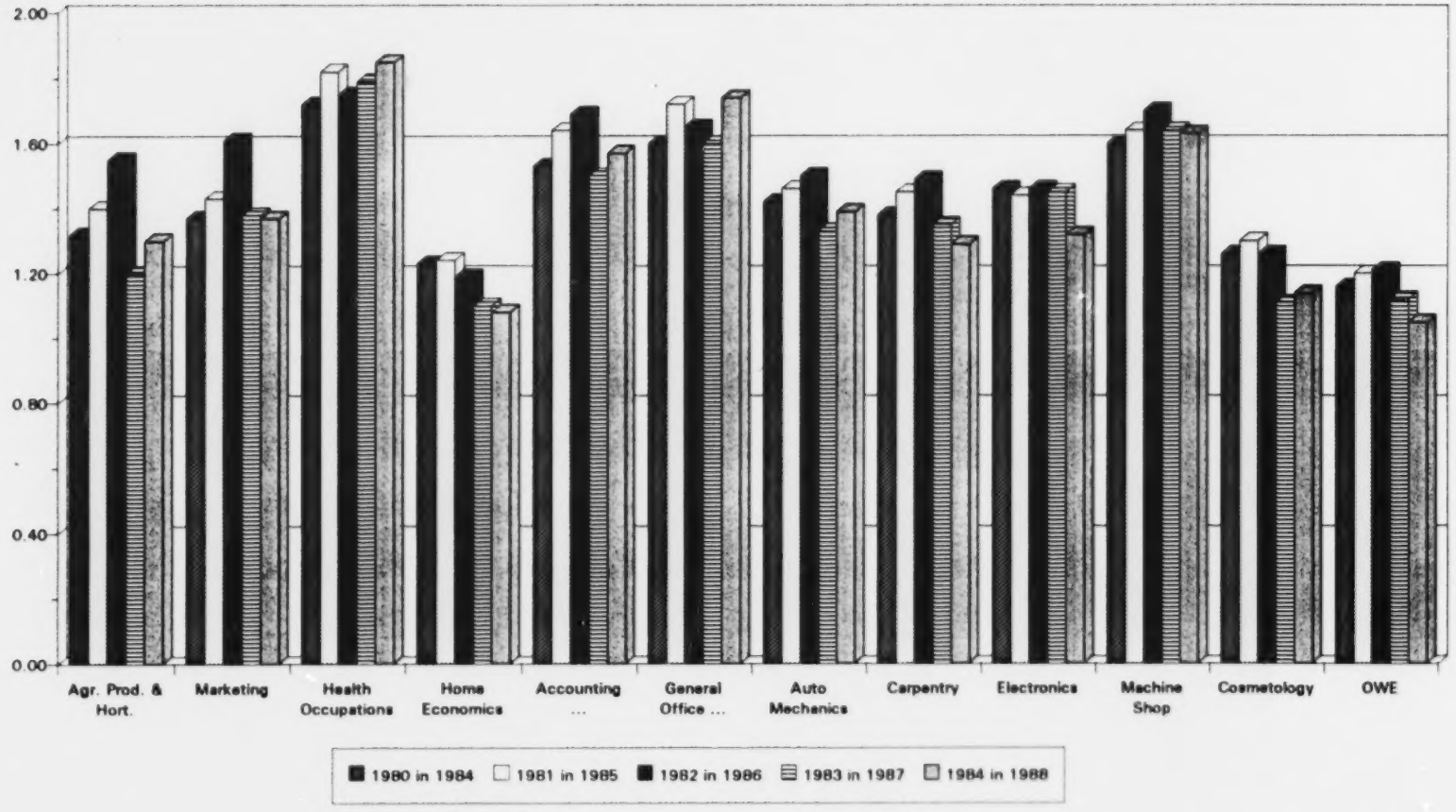
VOCATIONAL EDUCATION PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Agricultural Production and Horticulture	1.32	1.62	1.23	1.12	0.99	1.40	1.04	1.40
Marketing	1.37	1.43	1.36	1.40	1.17	1.37	1.61	1.50
Health Occupations Education	1.72	1.66	1.71	1.50	1.78	1.77	1.71	1.92
Home Economics Education	1.23	1.36	1.21	1.22	1.48	1.21	1.00	1.33
Accounting, Computing and Business Data Processing	1.53	1.33	1.56	1.32	1.71	1.81	1.57	1.74
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.60	1.50	1.63	1.28	1.70	1.57	1.55	1.86
Auto Mechanics	1.42	1.27	1.45	1.28	1.76	1.72	1.73	1.58
Carpentry	1.38	1.33	1.39	1.32	1.66	1.60	1.35	1.54
Electronics	1.46	1.48	1.45	1.55	1.85	1.47	1.45	1.60
Machine Shop	1.60	1.43	1.63	1.83	1.98	1.66	1.83	1.77
Cosmetology	1.26	1.15	1.27	1.02	0.87	1.11	1.73	1.44
Occupational Work Experience	1.16	1.24	1.15	1.20	1.33	1.13	1.04	1.29

TABLE IIE-6

RATIOS OF MEAN INCOMES OF 1984, 1983, 1982, 1981 AND 1980 SECONDARY VOCATIONAL GRADUATES TO MEAN INCOME OF COMPARABLE GROUPS IN GENERAL POPULATION BY VOCATIONAL PROGRAM

VOCATIONAL PROGRAM	1988 Mean Income of 1984 Secondary Vocational Graduates/ Mean Income of Comparable Groups	1987 Mean Income of 1983 Secondary Vocational Graduates/ Mean Income of Comparable Groups	1986 Mean Income of 1982 Secondary Vocational Graduates/ Mean Income of Comparable Groups	1985 Mean Income of 1981 Secondary Vocational Graduates/ Mean Income of Comparable Groups	1984 Mean Income of 1980 Secondary Vocational Graduates/ Mean Income of Comparable Groups
Agricultural Production and Horticulture	1.30	1.20	1.55	1.40	1.32
Marketing	1.37	1.38	1.61	1.43	1.37
Health Occupations Education	1.85	1.79	1.75	1.82	1.72
Home Economics Education	1.08	1.10	1.19	1.24	1.23
Accounting, Computing and Business Data Processing	1.57	1.50	1.69	1.64	1.53
General Office Clerical, Stenographic, Secretarial, and Related Occupations	1.74	1.60	1.65	1.72	1.60
Auto Mechanics	1.39	1.33	1.50	1.46	1.42
Carpentry	1.29	1.35	1.49	1.45	1.38
Electronics	1.32	1.45	1.46	1.44	1.46
Machine Shop	1.63	1.64	1.70	1.64	1.60
Cosmetology	1.14	1.11	1.26	1.30	1.26

DIAGRAM IIE-A
Ratios of Mean Incomes of 1980, 1981, 1982, 1983 and 1984 Secondary Vocational Graduates
To Mean Incomes of Comparable Groups in General Population
by Vocational Program



CHAPTER III

THE 1984 ASSOCIATE VOCATIONAL EDUCATION GRADUATES

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THE 1984 ASSOCIATE VOCATIONAL EDUCATION GRADUATES

The study utilized federal income tax records for the 1984 graduates of two Associate Vocational education programs or combinations of programs in the State of Ohio. In this chapter, we will report on and analyze the earnings and geographic mobility of the 1984 Associate Vocational graduates in 1988 four years following their graduation. The performance in 1988 of the 1984 Associate Vocational graduates will be compared with that of the 1983, 1982, 1981 and 1980 Associate Vocational graduates in 1987, 1986, 1985 and 1984, respectively.

Table III-A provides information on the 1,534 graduates of the two programs studied. It lists the programs, the number of graduates, and the percentage of females and males in each program. Table III-B presents the distribution of the 1984 Associate completers by vocational program and geographic training region.

TABLE III-A

STUDY OF 1984 ASSOCIATE VOCATIONAL GRADUATES DISTRIBUTION BY PROGRAM AND GENDER

VOCATIONAL PROGRAM	NUMBER OF GRADUATES	PERCENTAGE FEMALES	PERCENTAGE MALES
Health Occupations Education	1,023	93.76%	6.24%
Technical Education	511	10.37%	89.63%
TOTAL	1,534	65.98%	34.02%

TABLE III-B

STUDY OF 1984 ASSOCIATE VOCATIONAL GRADUATES
DISTRIBUTION BY VOCATIONAL PROGRAM AND GEOGRAPHIC REGION

VOCATIONAL PROGRAM	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO	ALL REGIONS
Health Occupations Education	130	581	232	29	51	1,023
Technical Education	107	68	110	0	226	511
TOTAL	237	649	342	29	277	1,534

A. INCOME OF 1984 ASSOCIATE VOCATIONAL GRADUATES: 1988 INCOME TABULATIONS

The data provided by Internal Revenue Service were used to determine the economic performance of the 1984 Associate Vocational graduates four years following their graduation.

Tables IIIA-1 and IIIA-2 present data on the 1988 Tax Year reported incomes of the 1984 Associate Vocational graduates for each of the two programs. Reported income is the sum of wages and salaries, income from interest, dividends and other income (miscellaneous income from work provided by other than as employees) as reported to the Internal Revenue Service. Table IIIA-2, for example, provides the reported income data of those who completed the Technical Education Program. For the entire group of graduates, the mean reported income in 1988 was $22,598. Among the group, reported income varied as follows: 7.19% received less than $5,500 (a mean of $3,962); 1.48% between $5,500 and $6,999 (a mean of $6,433); another 3.39% between $7,000 and $8,499 (a mean of $8,250); 2.97% between $8,500 and $9,999 (a mean of $9,872); 3.53% between $10,000 and $11,499 (a mean of $11,497); 2.39% between $11,500 and $12,999 (a mean of $12,267); 2.39% between $13,000 and $14,499 (a mean of $12,267); 4.87% between $14,500 and $15,999 (a mean of $15,285); 10.67% between $16,000 and $18,999 (a mean of $17,974); 15.41% between $19,000 and $21,999 (a mean of $21,456); 10.75% between $22,000 and $23,999 (a mean of $23,532); and 34.96% had a reported income of at least $24,000 with a mean of $34,620.

The table also shows a distribution of reported income for those among the Associate graduates of 1984 who resided outside the State of Ohio in 1988 as compared to those who resided in the state (a mean income of $25,248 and $21,972 respectively). The reported incomes of the Ohio residents are then shown by the region of their residence (Central Ohio, Northeast Ohio, Northwest Ohio, Southwest Ohio and Balance of Ohio).

A tabulation of mean reported income by program and region is given in Table IIIA-3.

TABLE IIIA-1
HEALTH OCCUPATIONS EDUCATION
1984 ASSOCIATE VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean	Outside Ohio Percent/Ohio	All Ohio Percent/Mean	Central Ohio Percent/Mean	Northeast Ohio Percent/Mean	Northwest Ohio Percent/Mean	Southwest Ohio Percent/Mean	Balance of Ohio Percent/Mean
Under $5,500	6.14% $3,683	14.16% $2,994	5.14% $3,911			4.29% $2,615		
$5,500-6,999	1.69 6,856		1.91 6,933					7.19% $5,305
$7,000-8,499	1.48 8,226		1.67 8,317					
$8,500-9,999	1.38 9,987	2.83 10,606				5.71 11,369		3.60 9,394
$10,000-11,499	2.33 11,196							1.57 11,351
$11,500-12,999	2.86 12,938	5.66 13,026	3.82 12,003			7.86 14,104		2.70 13,442
$13,000-14,499	3.50 14,169		2.86 13,489				8.34% $14,888	
$14,500-15,999	4.02 15,675	12.26 16,692	3.58 15,134		14.28% $17,622	15.00 17,956		2.02 14,635
$16,000-18,999	8.79 18,654		12.89 18,267				19.44 18,185	12.58 17,766
$19,000-21,999	10.49 21,800	12.26 20,963						
$22,000-23,999	9.32 23,919	52.83 31,592	18.85 22,783		85.72 26,037	67.14 29,720	22.22 23,109	20.90 23,416
$24,000 and over	48.00 33,429		49.28 33,268				50.00 35,794	49.44 32,483
TOTAL	100% $24,560	100% $22,768	100% $24,902	100% $27,271	100% $24,835	100% $24,517	100% $27,809	100% $24,745

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
by I.A. Ghazalah, Ohio University

TABLE IIIA-2
TECHNICAL EDUCATION
1984 ASSOCIATE VOCATIONAL COMPLETERS
REPORTED INCOME
(1988 TAX YEAR)

Size of Reported Income	All Regions Percent/Mean	Outside Ohio Percent/Ohio	All Ohio Percent/Mean	Central Ohio Percent/Mean	Northeast Ohio Percent/Mean	Northwest Ohio Percent/Mean	Southwest Ohio Percent/Mean	Balance of Ohio Percent/Mean
Under $5,500	7.19% $3,962	4.87% $2,195	7.69% $4,091				7.69% $4,833	5.69% $3,314
$5,500-6,999	1.48 6,433							6.06 7,507
$7,000-8,499	3.39 8,250	4.88 9,094	5.38 7,723					
$8,500-9,999	2.97 9,872							2.49 9,667
$10,000-11,499	3.53 11,497	6.10 12,098	7.19 10,859					5.69 11,148
$11,500-12,999	2.39 12,267							
$13,000-14,499	2.39 14,389	3.66 15,417	3.59 13,546			14.00% $14,987		13.88 14,740
$14,500-15,999	4.87 15,285		3.85 15,025				12.82 16,920	
$16,000-18,999	10.67 17,974	7.32 18,463	5.38 16,608		30.00% $19,901	35.00 21,890		24.55 19,921
$19,000-21,999	15.41 21,456	15.85 21,496	24.87 20,767				17.95 19,848	
$22,000-23,999	10.75 23,532	57.32 32,513			70.00 28,802	16.00 23,979	61.54 26,839	41.64 31,206
$24,000 and over	34.96 34,620		42.05 31,720			35.00 31,819		
TOTAL	100% $22,598	100% $25,248	100% $21,972	100% $26,725	100% $26,132	100% $24,733	100% $22,620	100% $21,449

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
by I.A. Ghazalah, Ohio University

TABLE IIIA-3

MEAN INCOME OF 1984 ASSOCIATE VOCATIONAL GRADUATES BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Health Occupations Education	$24,560	$22,768	$24,902	$27,271	$24,835	$24,517	$27,809	$24,745
Technical Education	$22,598	$25,725	$21,972	$26,725	$26,132	$24,733	$22,620	$21,449

B. GEOGRAPHIC MOBILITY OF 1984 ASSOCIATE VOCATIONAL GRADUATES

The mobility patterns of Associate Vocational graduates can be analyzed by comparing their residence in 1988 to that of 1984, the year in which they completed their programs.

Each vocational graduate was identified by the zip code of the school attended in 1984. Using the geographical regional classification of the State based on zip codes, we were able to determine for each vocational program the number of graduates who resided in each of the five regions of the State of Ohio (Central, Northeast, Northwest, Southwest and Balance of Ohio).

The group data on vocational graduates provided by the Internal Revenue Service for 1988 were classified by the same geographical regions within the State as well as a sixth region, out of state, for each of the vocational programs. We were thus able to trace the net mobility of the Associate Vocational graduates between 1984 and 1988.

For each of the vocational programs, the state's retention rate was obtained by calculating the percentage of the total number of the 1984 graduates who in 1988 resided in any of the five Ohio regions. Table IIIB-1 shows the retention rate for each of the two associate vocational programs as well as for both programs combined. The retention rate of both associate programs is 84.05%, indicating that 15.95% of the 1984 graduates of both programs were out-of-state residents in 1988. The retention rate was 81.11% for Technical Education and 85.75% for Health Occupations Education. The retention rates for the 1983, 1982, 1981 and 1980 graduates are also shown for comparison. Diagram IIIB-A is a bar graph of the retention rates by program of the five chronological groups.

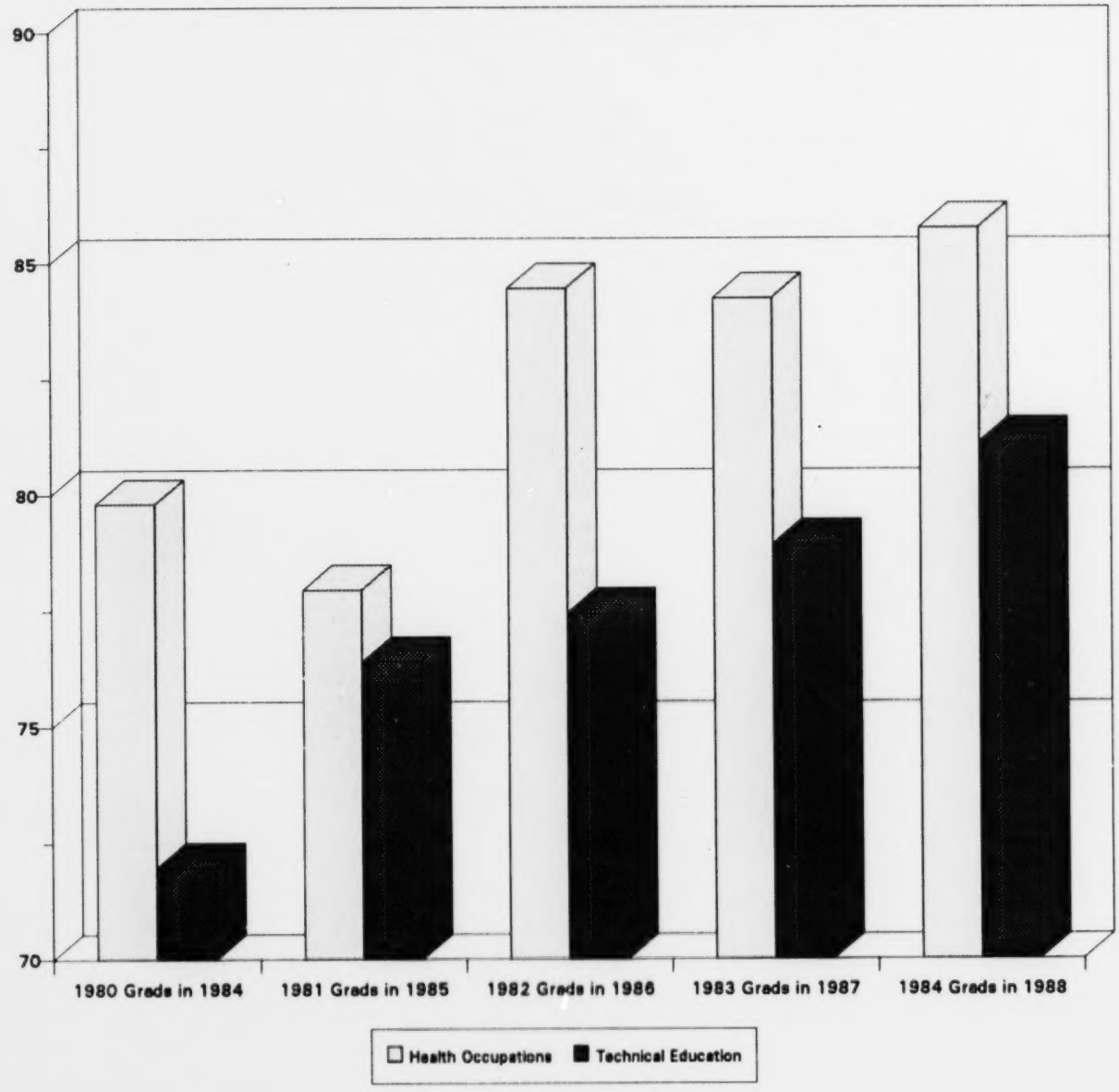
It should be noted that net retention rates are calculated on basis of residence. Therefore, retention by the State included those who resided in Ohio but worked out of state and did not include out-of-state residents whose work place was in Ohio.

TABLE IIIB-1

State Retention Rates of 1984, 1983, 1982, 1981 and 1980 Associate Vocational Graduates by Vocational Program

VOCATIONAL PROGRAM	Percent of 1984 Graduates Who Maintained Residence in Ohio in 1988	Percent of 1983 Graduates Who Maintained Residence in Ohio in 1987	Percent of 1982 Graduates Who Maintained Residence in Ohio in 1986	Percent of 1981 Graduates Who Maintained Residence in Ohio in 1985	Percent of 1980 Graduates Who Maintained Residence in Ohio in 1984
Health Occupations Education	85.75%	84.24%	84.46%	77.94%	79.80%
Technical Education	81.11%	78.91%	77.44%	76.40%	71.97%
TOTAL	84.05%	81.53%	78.82%	77.02%	75.91%

DIAGRAM IIIB-A
State Retention Rates of 1980, 1981, 1982, 1983 and 1984
Associate Vocational Graduates
by Vocational Program



C. INCOME OF 1984 ASSOCIATE VOCATIONAL GRADUATES: COMPARISON WITH EQUIVALENT GROUPS

The 1988 income data on the 1984 Associate Vocational graduates may be analyzed using baseline data on a comparable group, i.e., one with the same age bracket and educational achievement.

The U.S. Bureau of the Census data on 1988 money income of persons in the United States[2] can be used as a baseline with appropriate adjustments for the U.S.-Ohio and Ohio-regional income relatives. In 1988, earnings in the United States for those in the 25-34 age group with 1-3 years of college education[3] was $15,049 for females and $23,132 for males.

In order to carry out the comparison between earnings of graduates of associate vocational programs in our study and those of the comparable group in the general population, we utilized the following procedure:

1. For each of the two Associate Vocational programs, a U.S. basic comparison figure of earnings was calculated using the gender breakdown of program completers (See Table III-A) as weights. For example, the basic 1988 U.S. figure of $15,553 for Health Occupations Education was calculated by multiplying 0.9376 (the proportion of females) times 15,049 (the female earnings figure) and adding the result to that of multiplying 0.0624 (the proportion of males) times 23,132 (the male earnings figure).
2. Bureau of the Census money income data for the applicable age group and years of schooling are nationwide data. Therefore, in order to provide an appropriate comparison of money incomes of vocational graduates to earners in the general population within the State of Ohio and within the five regions of the State, the money income data by program and region were adjusted

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[2] U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census, Money Income of Households, Families, and Persons in the United States: 1988 and 1989, Series P-60, No. 17.

[3] The median age of the 1984 associate degree graduates in Ohio was 30 years in 1988. This estimate was based on the Ohio Board of Regents' 1984 Student Inventory Data Enrollment in Ohio's Institutions of Higher Education: Two Year Centers.

using income relatives between the United States and Ohio, and between the United States and each of Ohio's five geographical regions. The income relative for each region was calculated using a population-weighted average of income relatives of component counties based on 1988 per capita income estimates for Ohio counties.

Each 1988 mean reported income figure for the 1984 Associate Vocational graduates (Table IIIA-3) was then divided by the applicable income ratio relative for the regions (or the State as a whole) to that of the U.S.

3. Each of these adjusted reported income figures was then divided by the 1988 mean income applicable to the program as described in 1 above.

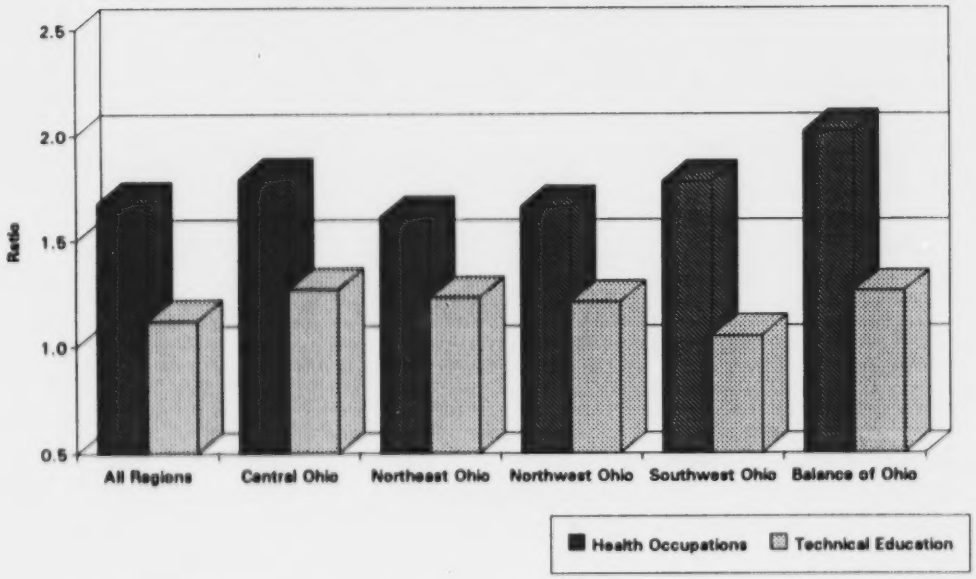
The results are shown in Table IIIC-1. The ratios of the 1988 mean incomes of the 1984 Associate Vocational graduates to the 1988 mean incomes of the comparable group (the same age bracket, educational achievement and geographic region) are listed by vocational program and region. Diagram IIIC-A is a bar chart of the ratios of mean income of Associate Vocational graduates to mean general income.

TABLE IIIC-1

RATIOS OF MEAN INCOME OF 1984 ASSOCIATE VOCATIONAL GRADUATES TO MEAN GENERAL INCOME BY VOCATIONAL PROGRAM AND REGION (1988 TAX YEAR)

VOCATIONAL PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
Health Occupations Education	1.68	1.46	1.72	1.79	1.61	1.66	1.78	2.02
Technical Education	1.12	1.17	1.09	1.27	1.23	1.21	1.05	1.26

DIAGRAM IIIC-A
Ratios of Mean Income of 1984 Associate Vocational Graduates To Mean General Income By Program and Region (1988 Tax Year)



D. INCOME OF 1984, 1983, 1982, 1981 AND 1980 ASSOCIATE VOCATIONAL GRADUATES FOUR YEARS FOLLOWING THEIR GRADUATION: A COMPARISON

The study has focused on 1988, which marks four years following the graduation of the 1984 Associate Vocational graduates. The purpose of this section is to compare the mean income in 1988 of the 1984 vocational graduates with those of the 1983, 1982, 1981 and 1980 vocational graduates in 1987, 1986, 1985 and 1984, respectively. The five groups of vocational education graduates will be compared at the same point in their respective working paths, four years after their graduation.

Table IIID-1 shows the mean income by vocational program and region of each of these five groups of Associate Vocational graduates.

TABLE IIID-1

MEAN INCOME OF 1984, 1983, 1982, 1981 AND 1980 ASSOCIATE VOCATIONAL EDUCATION GRADUATES BY VOCATIONAL PROGRAM AND REGION

VOCATIONAL PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
HEALTH OCCUPATIONS EDUCATION								
1984 Graduates in 1988	$24,560	$22,768	$24,902	$27,271	$24,835	$24,517	$27,809	$24,745
1983 Graduates in 1987	$23,563	$24,301	$23,454	$21,244	$22,374	$24,178	$22,647	$23,594
1982 Graduates in 1986	$20,357	$21,295	$20,194	$19,141	$20,460	$21,950	$20,288	$19,794
1981 Graduates in 1985	$19,971	$20,521	$19,787	$17,613	$20,015	$20,330	$19,893	$19,982
1980 Graduates in 1986	$16,203	$17,403	$15,909	$14,683	$17,564	$16,477	$16,809	$15,654
TECHNICAL EDUCATION								
1984 Graduates in 1988	$22,598	$25,248	$21,972	$26,725	$26,132	$24,733	$22,620	$21,449
1983 Graduates in 1987	$22,546	$24,295	$22,390	$22,437	$25,386	$26,752	$24,316	$21,718
1982 Graduates in 1986	$23,067	$22,572	$23,005	$23,748	$24,425	$23,254	$22,191	$21,714
1981 Graduates in 1985	$20,758	$18,415	$21,114	$20,309	$21,351	$21,884	$20,013	$20,659
1980 Graduates in 1986	$19,218	$18,303	$19,441	$20,403	$19,657	$21,052	$21,446	$19,160

1984 Vocational Education Graduates in 1988: A Study Based on Federal Income Tax Data
by I.A. Ghazalah, Ohio University

E. INCOME OF 1984, 1983, 1982, 1981 AND 1980 ASSOCIATE VOCATIONAL GRADUATES FOUR YEARS FOLLOWING THEIR GRADUATION: COMPARISON WITH EQUIVALENT GROUPS

A final comparison between the income performance of the 1984, 1983, 1982, 1981 and 1980 vocational graduates was conducted by reference to the comparable group in the general population.

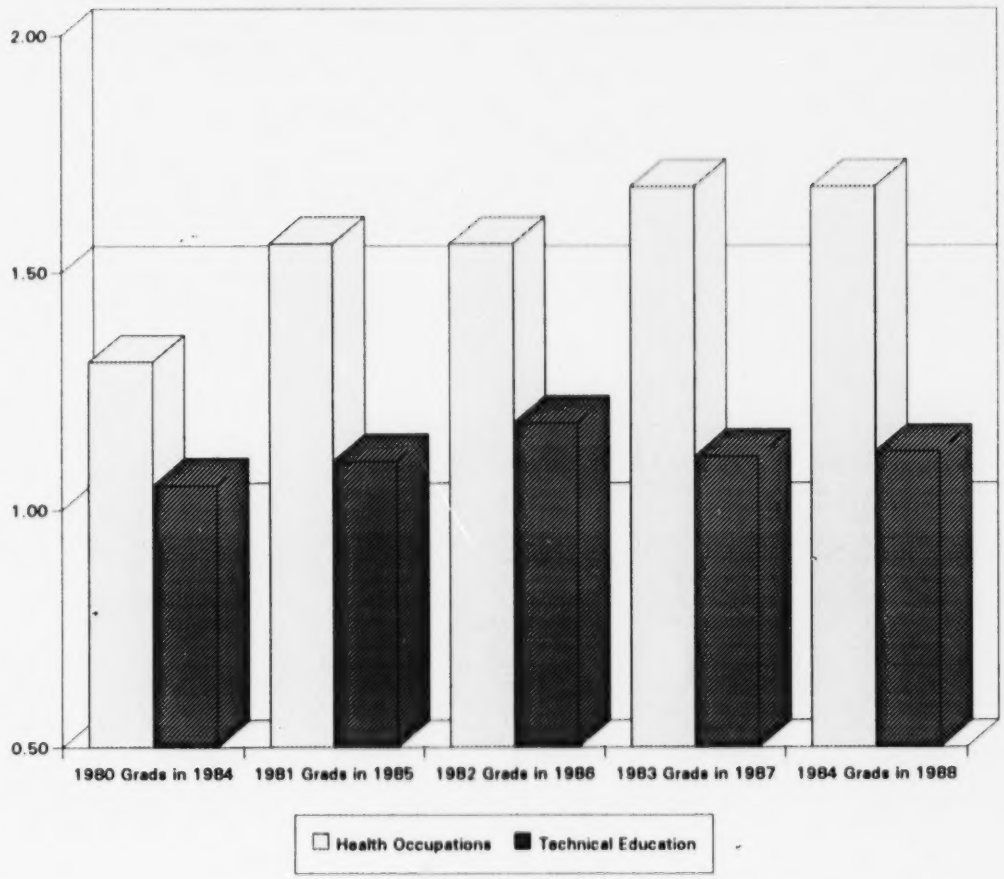
Table IIIE-1 and Diagram IIIE-A show the ratios of mean incomes of Associate Vocational graduates by program and region to the mean incomes of comparable groups for the 1984, 1983, 1982 and 1981 and 1980 completers in 1988, 1987, 1986, 1985 and 1984, respectively. This provides a comparison of their ratios of mean incomes to the mean incomes of comparable groups at the same point in the career path of vocational graduates, i.e. four years after completion of their programs.

TABLE IIIE-1

RATIOS OF MEAN INCOME OF 1984, 1983, 1982, 1981 AND 1980 ASSOCIATE VOCATIONAL EDUCATION GRADUATES TO MEAN INCOME OF COMPARABLE GROUPS IN GENERAL POPULATION BY VOCATIONAL PROGRAM AND REGION

VOCATIONAL PROGRAM	ALL REGIONS	OUTSIDE OHIO	ALL OHIO	CENTRAL OHIO	NORTHEAST OHIO	NORTHWEST OHIO	SOUTHWEST OHIO	BALANCE OF OHIO
HEALTH OCCUPATIONS EDUCATION								
1984 Graduates in 1988	1.68	1.46	1.72	1.79	1.61	1.66	1.78	2.02
1983 Graduates in 1987	1.68	1.65	1.68	1.44	1.54	1.71	1.51	1.85
1982 Graduates in 1986	1.56	1.54	1.54	1.39	1.32	1.74	1.45	1.74
1981 Graduates in 1985	1.56	1.52	1.54	1.31	1.51	1.58	1.45	1.88
1980 Graduates in 1984	1.31	1.34	1.30	1.14	1.36	1.34	1.30	1.45
TECHNICAL EDUCATION								
1984 graduates in 1988	1.12	1.17	1.09	1.27	1.23	1.21	1.05	1.26
1983 Graduates in 1987	1.11	1.13	1.11	1.04	1.21	1.29	1.10	1.17
1982 Graduates in 1986	1.18	1.09	1.18	1.15	1.21	1.16	1.00	1.24
1981 Graduates in 1985	1.10	0.93	1.12	1.03	1.09	1.15	1.00	1.32
1980 Graduates in 1984	1.05	0.97	1.08	1.08	1.03	1.16	1.12	1.21

DIAGRAM IIIE-A
Ratios of Mean Income of 1980, 1981, 1982, 1983 and 1984
Associate Vocational Graduates to Mean Income of
Comparable Groups in General Population
by Program



CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Vocational education, as all forms of education, has a multidimensional effect on the welfare of individuals and society. The economic performance of graduates of vocational programs is a primary factor in the evaluation of vocational education.

In its measurement of the economic performance of graduates of vocational programs, this study uses an original source of information – federal income tax records. The federal income tax source avoids a number of limitations associated with follow-up studies utilizing questionnaires. The tax records data are standardized by type of income and by period (tax year), and do not rely on the memory nor the selectivity of individual responses to questionnaires. The data were provided in batch form by the Internal Revenue Service from its Information Returns Master File in full compliance with the strict requirements regarding disclosure of personal information.

The economic performance of vocational graduates in 1984 is examined in 1988, four years following their graduation. The data on 22,091 graduates of twelve secondary and two associate vocational programs are categorized by the area of residence in 1988 – any of five regions in Ohio (Central, Northeast, Northwest, Southwest, and Balance of Ohio) and outside Ohio. The mean income of graduates of vocational programs four years following their graduation is compared to the mean income of equivalent groups in the general population (same age group, years of schooling and region of residence). The results indicate predominately higher incomes for graduates of all secondary and associate vocational programs in the study. The overall mean incomes of Secondary Vocational graduates are higher by 5 to 85 percent and those of Associate Vocational graduates by 12 and 68 percent. The higher percentage income also varies by region of residence in 1988.

The performance of the 1984 vocational graduates in 1988 was compared to that of the 1983, 1982, 1981 and 1980 vocational graduates (as reported in I.A. Ghazalah, 1983 Vocational Education Graduates in 1987, Ohio University, 1993; and 1982 Vocational Education Graduates in 1986, and 1981 Vocational Education Graduates in 1985, Ohio University, 1991 and 1989 Long Term Follow-up of Vocational Education Graduates, Ohio

University, 1989). The same data base, vocational programs and analytical techniques were used in studies of the five chronological groups of vocational graduates.

The mean income of Secondary Vocational graduates exceeds the mean income of the comparable group in the general population for each of the five chronological groups. The margin for the 1984 graduates ranged from 5% to 85%. For the 1983 graduates the margin ranged from 10% to 79% and for the 1982 graduates from 19% to 75%. For the 1981 graduates the range was from 20% to 82%, and for the 1980 graduates from 16% to 72%. In the Associate Vocational programs, the margins for Health Occupations graduates for 1984, 1983, 1982, 1981 and 1980 were 68%, 68%, 56%, 56% and 31%. The equivalent margins for Technical Education graduates were 12%, 11%, 18%, 10% and 5%.

The study also investigated the geographic mobility of vocational graduates between 1984, their year of program completion, and 1988. The mobility rates for graduates of all vocational programs combined and for graduates of each of the vocational programs indicate a high percent of vocational graduates remaining in the State, an overall percentage of 87.01% (with a range from 83.72% to 89.98% for individual programs) in Secondary programs and 84.05% in associate programs (85.75% for Health Occupations and 81.11% for Technical Education). For Secondary programs, the overall retention rates are higher for the 1984 than the 1983, 1982, 1981 and 1980 vocational graduates (87.01% compared to 85.42%, 84.46% 83.22% and 82.50%). For Assosciate programs, the State retention rate for the 1984 graduates is 84.05% compared to 81.53%, 78.82%, 77.02% and 75.91% for graduates of the four previous years.

The results of examining the economic performance of the 1984 vocational graduates (by reference to the comparable group in the general population) and comparing these results to those obtained for 1983, 1982, 1981 and 1980 vocational graduates indicate consistent value of the vocational programs and suggest a general improvement in the performance of successive groups of vocational graduates.

The data and analyses of the data presented in this study show the value of utilizing federal income tax records as a source of information on the performance of graduates of vocational education programs. The rewards from obtaining reliable and consistent federal tax data point to the potential in the pursuit of information on the performance of vocational graduates.

Knowledge of the performance of vocational graduates as a whole, as well as graduates of specific programs, would contribute to effective decision making. Longitudinal studies of groups of vocational graduates would provide information on the nature and level of the impact of vocational education and the change over time in this impact.